

VUMII

OPEN FRAME CAMERAS



SYSTEM SPECIFICATIONS



DETECT • RECOGNIZE • IDENTIFY

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MECHANICAL ICD'S

17μ	25μ
8.5mm	8.5mm
14mm	14mm
19mm	19mm
35mm	35mm
50mm	50mm
60mm	60mm
100mm	100mm
15-100	15-100
45/135	45/135

CAMERAS OVERVIEW

Vumii Open Frame cameras are a powerful line of 17μ 640 x 480 and 25μ 320 x 240 thermal engines paired with a wide variety of athermalized, dual field of view, and continuous zoom thermal lenses. The cameras provide an easy to integrate, versatile option for camera system engineers with advanced image processing algorithms that provide high contrast thermal video and can even run Vumii's advanced Fire Detection Algorithm.

Vumii OFCs are available with a wide variety of athermalized and motorized zoom optics and provide analog, digital, or camera link video output.

Vumii OFCs have a superb operating temperature range, low power consumption, and high resolution.



CONFIGURATIONS

Lens	17μ 640 x 480	25μ 320 x 240 (NTSC) / 25μ 384 x 288 (PAL)
Athermalized	8.5mm, 14mm, 19mm, 35mm, 50mm, 60mm, 100mm,	8.5mm, 14mm, 19mm, 35mm, 50mm, 60mm, 100mm,
Zoom	45/135mm DFOV, 15-100mm CZ, 25-225mm CZ	45/135mm DFOV, 15-100mm CZ

APPLICATIONS

- UAV
- Driver Vision Enhancement
- Multi-Sensor Camera systems
- Weapon Sights
- Hand Held Systems

MAJOR COMPONENTS

- Thermal Engine
- Thermal Lens
- Open Frame Enclosure (athermalized optics)
- Engine Mount Plate (zoom optics)

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100mm	100mm
15-100	15-100
45/135	45/135

SYSTEM SPECIFICATIONS

THERMAL ENGINE:

- Imager Type: Uncooled Microbolometer
- Spectral Band: 7.5 - 14μ
- Pixel Size / Resolution: 17μ / 640 x 480 NTSC/PAL
25μ / 320 x 240 NTSC
25μ / 384 x 288 PAL
- NETD: 17μ Configuration: <50° mK
25μ Configuration: <45° mK

LENS CONFIGURATIONS:

- Available Lenses:
 - Athermalized: 8.5mm, 14mm, 19mm, 35mm
50mm, 60mm, 100mm
 - Dual Field of View: 45/135mm
 - Continuous Zoom: 15-100mm
 - Continuous Zoom: 25-225mm

VIDEO INTERFACE:

- Analog: RS-170/CCIR, 1.0V p-p, 75ohm
RS-170 Latency: 50ms
CCIR Latency: 60ms
- Digital: (25μ only) Camera Link
Processed Video (8 bit, 30Hz)
Detector Raw Data (14bit, 60Hz)
NUC & BPR (14 bit, 60Hz)
Latency: 240μs
- Time to Image: 1 second (NUC, no logo)

POWER REQUIREMENTS:

- Power Input: 17μ Configuration: 7-28VDC
25μ Configuration: 8-14VDC
- Power Consumption (typical):

	Athermalized	Zoom
17μ Configuration:	4w	16w
25μ Configuration:	1.5w	14w

ENVIRONMENTAL:

- Storage Temperature: -40°C to +71°C
-40° F to +160° F
- Operating Temperature: -40°C to +60°C
-40° F to +140° F

MECHANICAL PARAMETERS:

- Dimensions: Dependent on lens type, check ICDs
- Weight:

	17μ	25μ
8.5mm	199g (7.09oz)	263g (9.28oz)
14mm	200g (7.06oz)	264g (9.31oz)
19mm	194g (6.84oz)	258g (9.10oz)
35mm	305g (10.76oz)	369g (13.02oz)
50mm	387g (13.65oz)	451g (15.91oz)
60mm	373g (13.16oz)	437g (15.41oz)
100mm	526g (18.55oz)	590g (20.81oz)
15-100mm CZ	1460g (51.50oz)	1580g (55.73oz)
45/135mm DFOV	1610g (56.80oz)	1700g (59.97oz)
25-225mm CZ	4500g (158.73oz)	

COMMUNICATION:

- RS-232/RS-422 Serial
- Protocol: Pelco D
No Parity Bit
8 bit data
1 stop bit
Baud Rate: 2400 only
- Vumii (SDK Available)
No parity Bit
8 bit data
1 stop bit
Baud Rate: 57600, 19200, 9600
4800, 2400

AVAILABLE FUNCTIONS:

- Polarity, Image Flip, Digital Zoom (1x, 2x, 4x, 8x), Reticle, Graphic overlays, Image snapshot, Gain/Level Control, Region of Interest, Text Overlay, Power Up Logo, Shutter, NUC, Dynamic reticle, Image Averaging

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THERMAL ENGINES

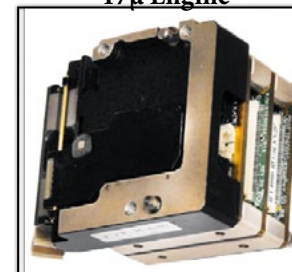
OVERVIEW

Vumii OFC's use Vumii's high sensitivity un-cooled microblometer thermal cores available in 17μ 640 x 480 resolution (NTSC/PAL) or 25μ 320 x 240 resolution (NTSC) and 25μ 384 x 288 resolution (PAL).

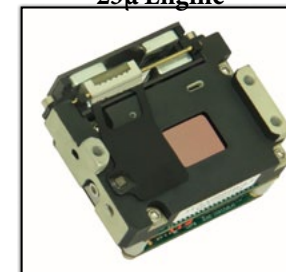
Vumii OFC's feature proprietary image processing, noise reduction, and contrast enhancement via advanced embedded algorithms.

Additionally, many of the OFC engine/lens configurations have the option of adding Vumii's **innovative Fire Detection** module that allows for Fire Detection and High Risk of Fire (Hot Spot) detection at ranges up to 6km.

17μ Engine



25μ Engine



ENGINE SPECIFICATIONS AND FEATURES

Pixel Size/Resolution	17μ 640 x 480 (NTSC/PAL)	25μ 320 x 240 (NTSC)	25μ 384 x 288 (PAL)
Spectral band	7.5-14μ	7.5-14μ	7.5-14μ
NETD	<70° mK	<45° mK	<45° mK
Frame Rate	Full - 30/25 (NTSC/PAL) or Export - 7.5/8.3 (NTSC/PAL)		
Analog Video Output	RS-170/CCIR, 1.0V p-p, 75ohm; RS-170 Latency: 50ms; CCIR Latency: 60ms		
Digital Video Output	Camera Link; Processed Video (8 bit, 30Hz); Detector Raw Data (14bit, 60Hz); NUC & BPR (14 bit, 60Hz); Latency: 240μs		
Time to Image	1 second		
Control Features	Polarity, Image Flip, Digital Zoom (1x, 2x, 4x, 8x), Reticle, Graphic overlays, Image snapshot, Gain/Level Control, Region of Interest, Text Overlay, Power Up Logo, Shutter, NUC, Dynamic reticle, Image Averaging, Test Pattern		
Fire Detection	Available	n/a	n/a
Focus control	Motorized, Autofocus on Demand		
Digital Zoom	1x, 2x, 4x		
Snapshot	Onboard snapshot storage		
Operating Temperature	-40°C to +60°C (-40° F to +140° F)		
Power Input	7-28VDC	8-14VDC	8-14VDC
Power Consumption	Avg: 2.5w (Max: 9.5w)	Avg: 1.47w (Max: 12w)	Avg: 1.47w (Max: 12w)

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100mm	100mm
15-100	15-100
45/135	45/135

LENSES

Vumii OFC's are available with a wide variety of fixed field of view Athermalized lenses as well as several varieties of zoom optics. All thermal engines have the ability to perform auto-focus on demand and manual control the zoom lens position and focus.



ATHERMALIZED LENSES & FIELD OF VIEW TABLE

Engine		17μ 640 x 480 (NTSC/PAL)	25μ 320 x 240 (NTSC)	25μ 384 x 288 (PAL)
Lens	F#			
8.5mm	f/1.2	73.2°	53.4°	64.2°
14mm	f/1.2	44.0°	32.3°	38.8°
19mm	f/1.1	31.2°	23.6°	27.9°
35mm	f/1.2	17.4°	12.9°	15.6°
50mm	f/1.2	12.4°	9.1°	11.0°
60mm	f/1.25	10.3°	7.6°	9.1°
100mm	f/1.5	6.2°	4.5°	5.5°

ZOOM LENSES & FIELD OF VIEW TABLE

Engine		17μ 640 x 480 (NTSC/PAL)	25μ 320 x 240 (NTSC)	25μ 384 x 288 (PAL)
Lens	F#			
Continuous Zoom 15-100mm	f/1.4	42.2° - 6.2°	30.8° - 4.6°	37.1° - 5.5°
Dual Field of View 45/135mm	f/1.1 f/1.6	14.3° / 4.6°	10.4° / 3.4°	12.6° / 4.1°
Continuous Zoom 25-225mm	f/1.5	24.5° - 2.8°	n/a	n/a

= Fire Detection Available

*All thermal engines are available without integrated lens

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MECHANICAL ICD's

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8.5mm	8.5mm
14mm	14mm
19mm	19mm
35mm	35mm
50mm	50mm
60mm	60mm
100mm	100mm
15-100	15-100
45/135	45/135

COMMUNICATION

The 17μ OFC engine uses a 20 pin Hirose connector part number: DF20F-20DP-1V(59) for electrical connections.
The 25μ OFC engine uses a 30 pin Hirose connector part number: DF20F-30DP-1V(59) for electrical connections.

Note: For improved flexibility, the thermal imaging engine electrical interfaces do not include protection (except reverse voltage up to -35V).

It is the system integrator's responsibility to protect the engine from surge currents, over voltage, etc.

INTERFACE GROUPS

Communication

Serial data interfaces include:

- RS232 – 17μ, 25μ
- RS422 – 17μ

Two communication protocols are supported:

Pelco-D

Vumii Protocol

17μ Engine: Communication Protocol Document (P/N PS1U6A0001A)

25μ Engine: Communication Protocol Document (P/N PS1U5006)

The UART port configuration for Vumii protocol is:

- No parity bit
- 8-bit data
- 1 stop bit
- Baud rate: 57600, 19200, 9600, 4800, and 2400

The UART port configuration for Pelco-D protocol is:

- No parity bit
- 8-bit data
- 1 stop bit
- Baud rate: 2400 only

Inputs/ Outputs

GPIO (Discrete)

Output configuration: the engine drives each of the pins to high or low level and controls external devices

Input configuration: controls the functionality of the engine. Setting the interface to high or low levels by an external device enables controls such as zoom, polarity, NUC, reticle, etc.

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50mm	50mm
60mm	60mm
100mm	100mm
15-100	15-100
45/135	45/135

VIDEO INTERFACE

The 17μ engine drives analog video output only.

The 25μ engine drives simultaneous digital and analog video, there is no dependency between the two interfaces although video between the two is synchronized. The 25μ engine can be synchronized using external synchronization on an external pin or can drive a synchronization signal on one of the five discrete pins. The synchronization reference will be on the Vertical Sync (VS).

- **Analog Video Output** - 1.0v p-p
RS170 (NTSC) Latency: 50ms
CCIR (PAL) Latency: 60ms

Time to Image: 25μ engine: 1 second
 17μ engine: 10 seconds

- **Digital Video Output** (25μ engine only) - CameraLink
The digital video output is transmitted in addition to the standard analog video output.

Digital Interface Data types:
Processed Video (8 bit, 30Hz)
Detector Raw Data (14 bit, 60Hz)
NUC & BPR (14 bit, 60Hz)

Latency: 240μs

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8.5mm	8.5mm
14mm	14mm
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35mm	35mm
50mm	50mm
60mm	60mm
100mm	100mm
15-100	15-100
45/135	45/135

ORDERING INFORMATION

VUMII OFC MODELS

A standard order OFC ships with the thermal engine, lens, and housing. Additional ordering options include an open ended wiring harness and Vumii's optional Fire Detection upgrade module.

Thermal Engine	Lens	Part Number
17μ 640 x 480 NTSC/PAL	8.5mm	OF8A17V-0A002
	14mm	OF1417V-0A002
	19mm	OF19A17V-0A002
	35mm	OF35A17V-0A002
	50mm	OF50A17V-0A002
	60mm	OF60A17V-0A002
	100mm	OF100A17V-0A002
	Continuous Zoom 15-100mm	OF100Z17V-0A002
	Dual Field of View 45/135mm	OF135D17V-0A002
	Continuous Zoom 25-225mm	OF225Z17V-0A002
25μ 320 x 240 NTSC	8.5mm	OF8A25Q-0A001
	14mm	OF1425Q-0A001
	19mm	OF19A25Q-0A001
	35mm	OF35A25Q-0A001
	50mm	OF50A25Q-0A001
	60mm	OF60A25Q-0A001
	100mm	OF100A25Q-0A001
	Dual Field of View 45/135mm	OF135D25Q-0A001
25μ 384 x 288 PAL	8.5mm	OF8A25Q-0A001
	14mm	OF1425Q-0A001
	19mm	OF19A25Q-0A001
	35mm	OF35A25Q-0A001
	50mm	OF50A25Q-0A001
	60mm	OF60A25Q-0A001



Item	Description	Part Number
25μ Wiring Harness*	Open ended wiring harness for 25μ engine - 25cm (9.8") (included)*	1U5H0020A
17μ Wiring Harness*	Open ended wiring harness for 17μ engine - 25cm (9.8") (included)*	1F7H0020A
Video wire*	Video wire with BNC connector (analog only) (included)*	7S1H5000B
Fire Detection Upgrade	Fire Detection and High Risk of Fire Feature upgrade - 18cm (7.1")	FDU-C1000

*A wiring harness and video wire are included with every standard order

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8.5mm	8.5mm
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60mm	60mm
100mm	100mm
15-100	15-100
45/135	45/135

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STANDARD ORDER

- **Vumii OFC's** arrive in one of two configurations:

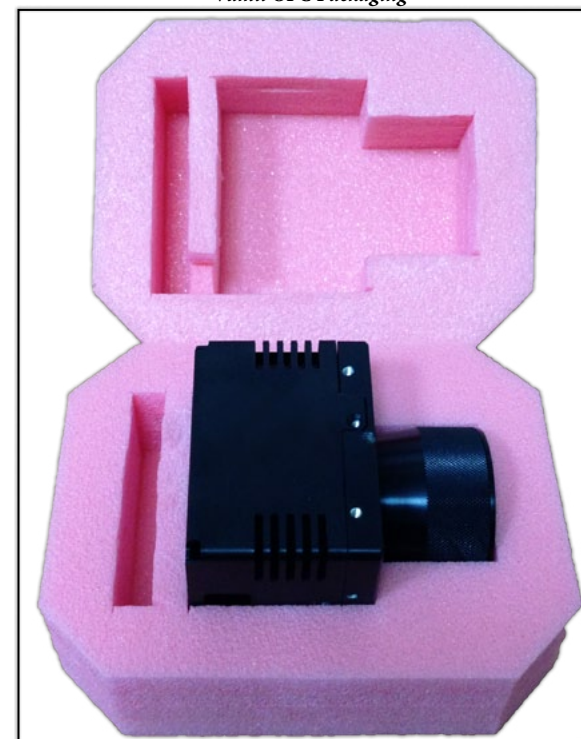
A) Integrated Engine, Lens, and Enclosure
(Athermalized configurations)

B) Integrated Engine, Lens, and Mount plate
(Zoom Optics configurations)

Other included items:

Software & Documentation CD containing:
 User Manual
 Test & Configuration Software (Sensorii)
 Wiring Harness
 Video connection wiring

Vumii OFC Packaging

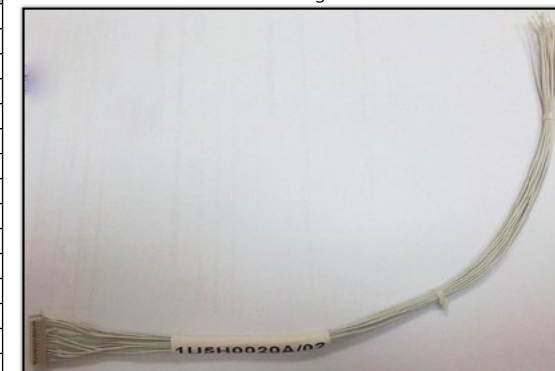


WIRING ASSIGNMENT 17 ENGINE

The 17 μ OFC engine uses a 20 pin Hirose connector part number: DF20F-20DP-1V(59) for electrical connections.

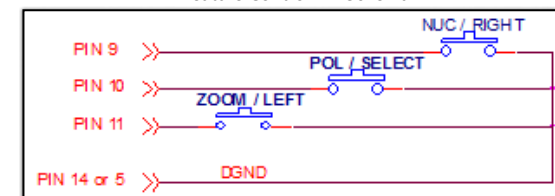
Pin #	Signal name	Interface	I/O	Signal Type	Notes
1	RS422_OUT+	Communication	In	+/- 5v to +/- 10v	RS422 Serial Communication
2	RS422_OUT- / RS232 OUT	Communication	In	+/- 5v to +/- 10v	RS422 / 232 Serial Communication
3	RS422_IN+ / RS232 IN	Communication	Out	+/- 5v to +/- 10v	RS422 / 232 Serial Communication
4	RS422_IN-	Communication	Out	+/- 5v to +/- 10v	RS422 Serial Communication
5	DGND	Communication	Out	-	Ground for serial communication only
6	unused	-	-	-	-
7	unused	-	-	-	-
8	unused	-	-	-	-
9	S.W. NUC / *Right	-	In	TTL 3.3v	Out to pin 14 or 5 to switch
10	S.W. Polarity/ *Select	-	In	TTL 3.3v	Out to pin 14 or 5 to switch
11	S.W. Zoom/ *Left	-	In	TTL 3.3v	Out to pin 14 or 5 to switch
12	unused	-	-	-	-
13	unused	-	-	-	-
14	DGND	Communication	Out	-	Ground for serial communication only
15	COM_SEL	Communication	In	-	For RS422 tie COM_SEL signal to DGND
16	VIN	Power	In	Power	7-28VDC
17	VIN	Power	In	Power	7-28VDC
18	GNDIN	Power	In	Power	
19	GNDIN	Power	In	Power	
20	unused	-	-	-	-

Included Wiring Harness



Mating connector Hirose Part #DF20A-20DS-1C

Feature Control Pin Schema



Inputs/ Outputs

GPIO (Discrete)

Output configuration: the engine drives each of the pins to high or low level and controls external devices

Input configuration: controls the functionality of the engine. Setting the interface to high or low levels by an external device enables controls such as zoom, polarity, NUC, reticle, etc.

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17 μ Engine

25 μ Engine

MECHANICAL ICD's

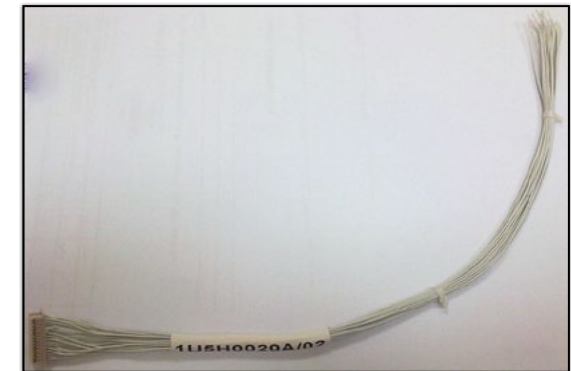
17 μ	25 μ
8.5mm	8.5mm
14mm	14mm
19mm	19mm
35mm	35mm
50mm	50mm
60mm	60mm
100mm	100mm
15-100	15-100
45/135	45/135

WIRING ASSIGNMENT 25 ENGINE

The 25um OFC engine uses a 30 pin Hirose connector part number: DF20F-30DP-1V(59) for electrical connections.

Pin #	Signal name	Interface	I/O	Signal Type	Notes
1	unused	-	-	-	-
2	Rx_out	Communication	In	+/- 5v to +/- 10v	RS232 Serial Communication
3	unused	-	-	-	-
4	Tx_out	Communication	Out	+/- 5v to +/- 10v	RS232 Serial Communication
5	unused	-	-	-	-
6	LVDS1P	Digital Video	Out	LVDS 2.5v	
7	unused	-	-	-	-
8	LVDS1N	Digital Video	Out	LVDS 2.5v	
9	DGND	Power	Out	Power	Output digital ground for JTAG, discrete, or serial communication only
10	LVDS2P	Digital Video	Out	LVDS 2.5v	
11	3_3OUT	Power		Power	Output 3.3v digital for JTAG or discrete only
12	LVDS2N	Digital video	Out	LVDS 2.5v	
13	DISCRETE 1	Discrete	In	TTL 3.3v	GPIO Discrete
14	LVDS3P	Digital video	Out	LVDS 2.5v	
15	DISCRETE 2	Discrete	In	TTL 3.3v	GPIO Discrete
16	LVDS3N	Digital video	Out	LVDS 2.5v	
17	DISCRETE 3	Discrete	In	TTL 3.3v	GPIO Discrete
18	LVDS4P	Digital video	Out	LVDS 2.5v	
19	DISCRETE 4	Discrete	In	TTL 3.3v	GPIO Discrete
20	LVDS4N	Digital video	Out	LVDS 2.5v	
21	N.C.				
22	LVDS5P	Digital video CLK	Out	LVDS 2.5v	
23	Ext. Sync	Discrete	In	TTL 3.3v	GPIO Discrete
24	LVDS5N	Digital video CLK	Out	LVDS 2.5v	
25	DGND	Power	Out	Power	Output digital ground for JTAG, discrete, or serial communication only
26	Vin	Power	In	Power	8-14VDC
27	GNDin	Power	In	Power	
28	Vin	Power	In	Power	8-14VDC
29	GNDin	Power	In	Power	
30	Shield			Power	

Included Wiring Harness



Mating connector Hirose Part #DF20A-30DS-1C

Inputs/ Outputs

GPIO (Discrete)

Output configuration: the engine drives each of the pins to high or low level and controls external devices
 Input configuration: controls the functionality of the engine. Setting the interface to high or low levels by an external device enables controls such as zoom, polarity, NUC, reticle, etc.

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 25μ Engine

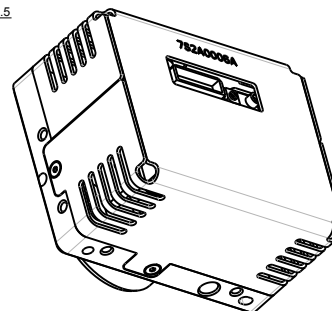
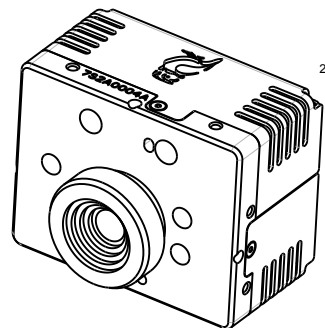
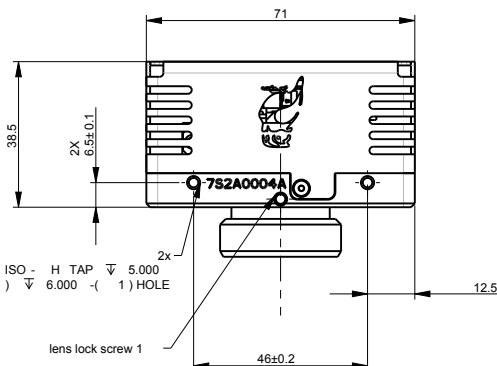
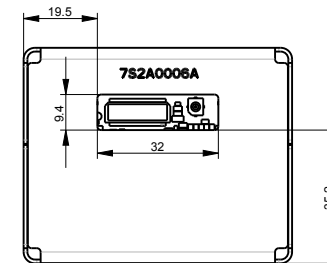
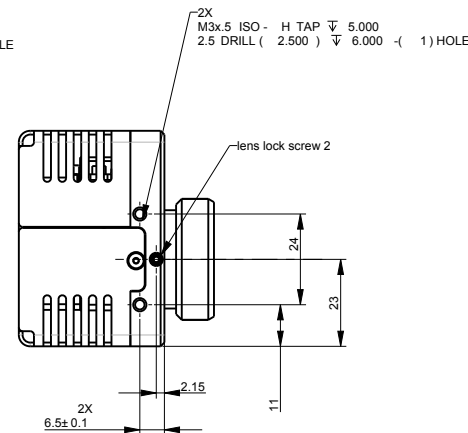
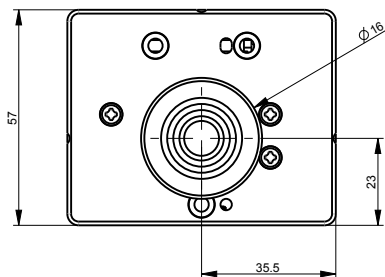
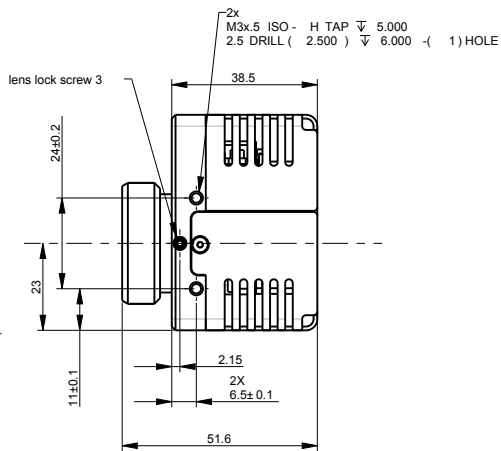
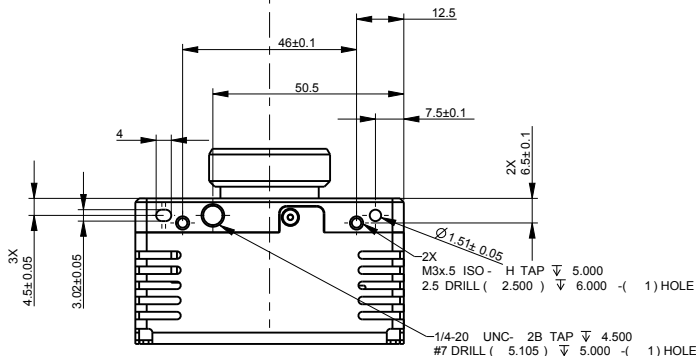
MECHANICAL ICD's

	17μ	25μ
8.5mm	8.5mm	
14mm	14mm	
19mm	19mm	
35mm	35mm	
50mm	50mm	
60mm	60mm	
100mm	100mm	
15-100	15-100	
45/135	45/135	

MECHANICAL ICD 25μ w/ 8.5MM LENS

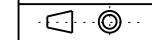
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DESCRIPTION	ECO NO.	USER ID.	DATE
IF CHANGES ARE GIVEN IN PARENTHESIS			YYYY-MM-DD



MASSA: 199 g

TOLERANCES UNLESS OTHERWISE SPECIFIED	CAT NO	DIM	IZO PARAMETRIC LTD	
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6 30 ± 0.2			DESIGNED Yilzhak	30-JAN-2013
30 120 ± 0.3			CHECKED Dov K	30-JAN-2013
120 315 ± 0.5			Q.A.	
315 1000 ± 0.8			APPROVED LAN C	31-JAN-2013
angles ± 1°			TITLE	
			P.N	SHT OF
			OF8A25Q-0A000	1 1
			DRAWING NO.	REV
			MD_OF8A25Q-0A000	A



SURFACE TEXTURE

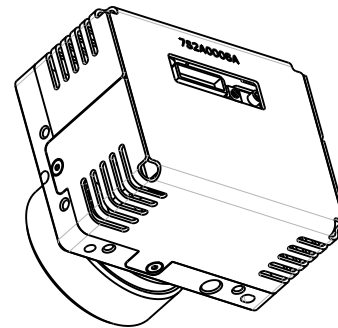
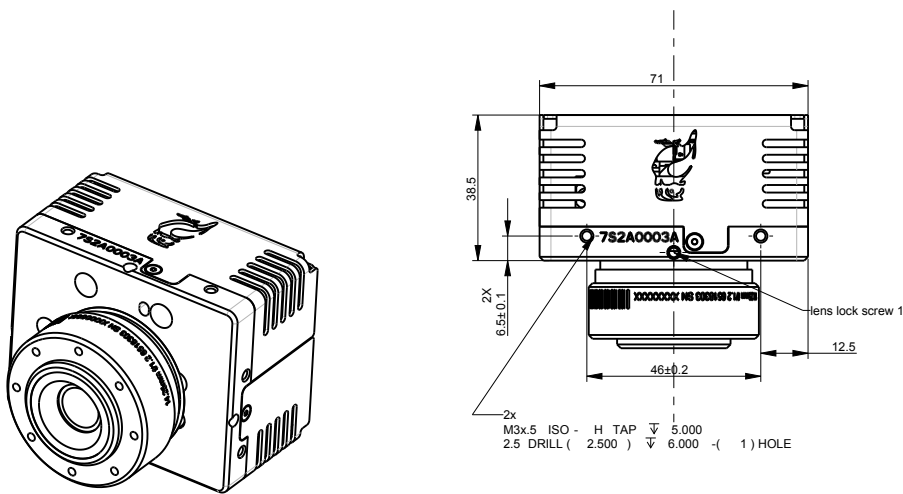
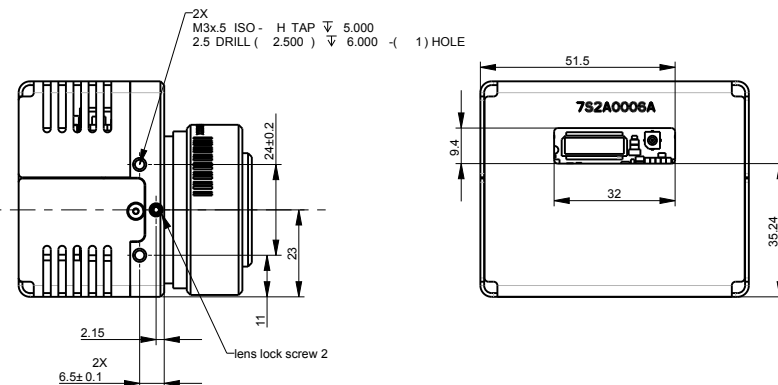
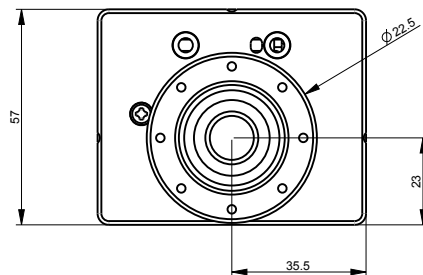
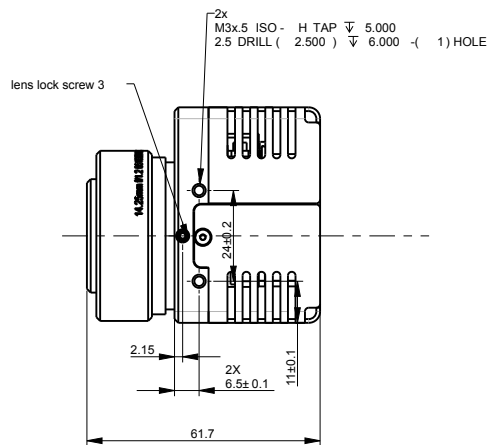
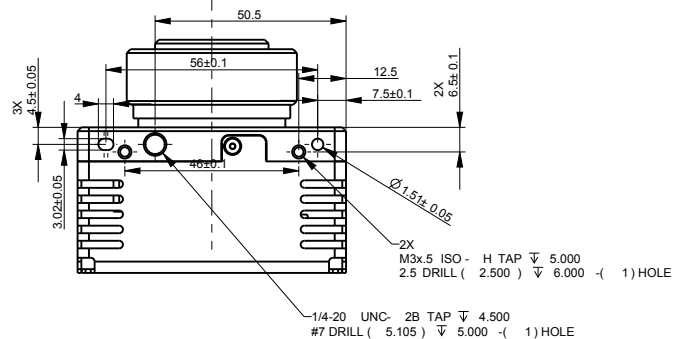
SCALE CLASS

1:1 UNCLASSIFIED

MECHANICAL ICD 25μ w/ 14MM LENS

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DESCRIPTION	ECO NO.	USER ID.	DATE
IF CHANGES ARE GIVEN IN PARENTHESIS			YYYY-MM-DD



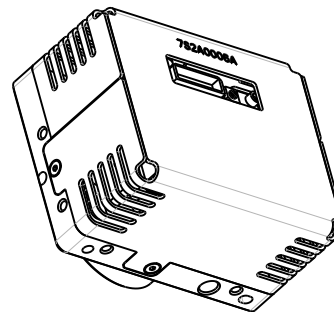
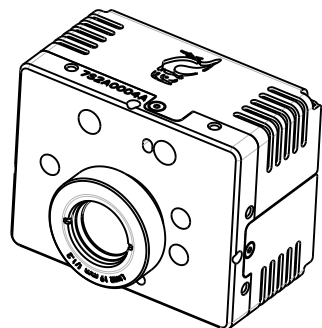
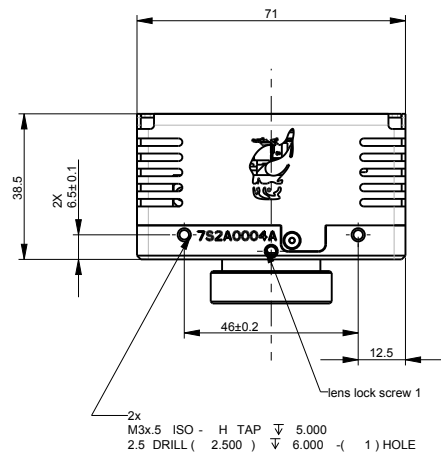
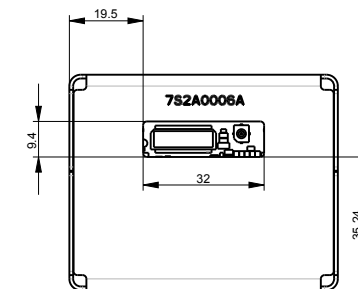
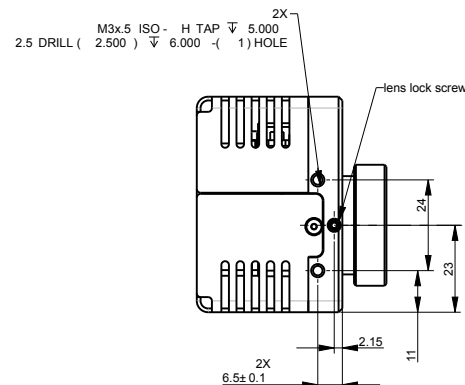
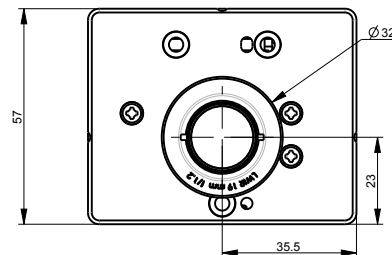
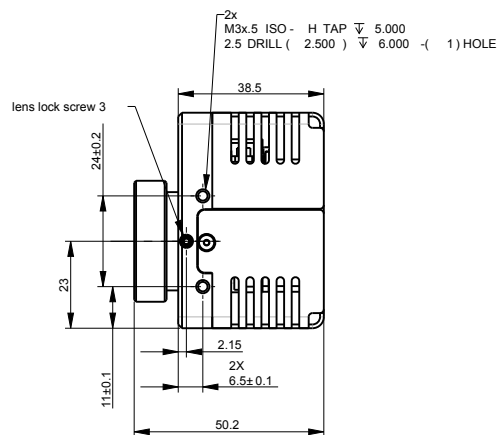
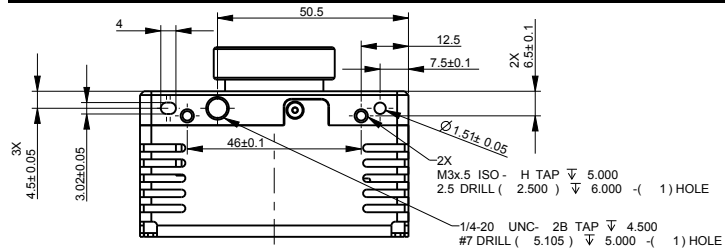
MASSA:200 g

		CAT NO	DIM	IZO PARAMETRIC LTD	
		QTY	UM	ID/SIGNATURE	DATE
				DESIGNED Yitzhak	30-JAN-2013
				CHECKED Dov K	30-JAN-2013
				Q.A.	.
				APPROVED LAN C	31-JAN-2013
		TITLE			
		ICD_BLOCK_320_14			
		P.N		SHT OF	
		OF14A25Q-0A000		1 1	
		DRAWING NO.		REV	
		MD_OF14A25Q-0A000		A	
TOLERANCES UNLESS OTHERWISE SPECIFIED Over Incl 0 6 ± 0.1 6 30 ± 0.2 30 120 ± 0.3 120 315 ± 0.5 315 1000 ± 0.8 angles ± 1°		SURFACE TEXTURE		SCALE	CLASS
		1:1		UNCLASSIFIED	SIZE

MECHANICAL ICD 25μ w/ 19MM LENS

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DESCRIPTION	ECO NO.	USER ID.	DATE
IF CHANGES ARE GIVEN IN PARENTHESIS			YYYY-MM-DD



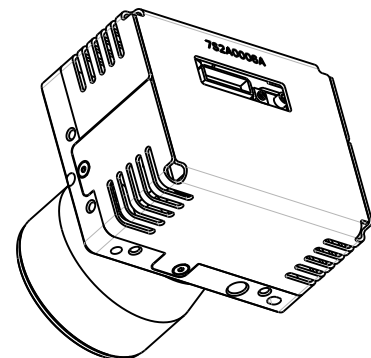
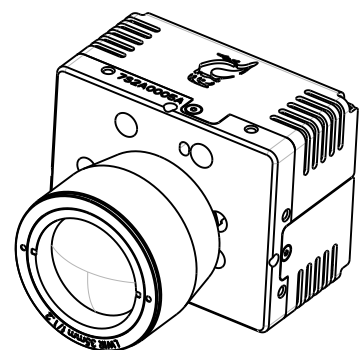
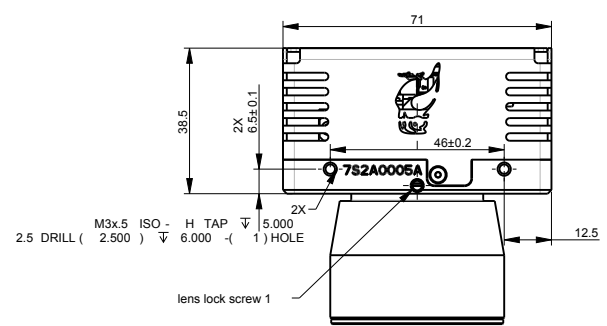
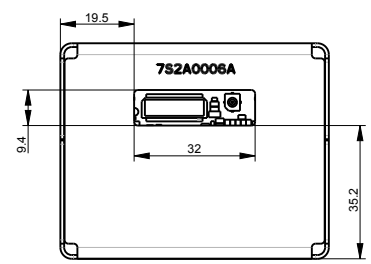
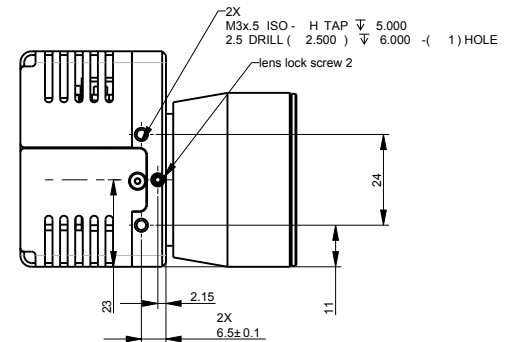
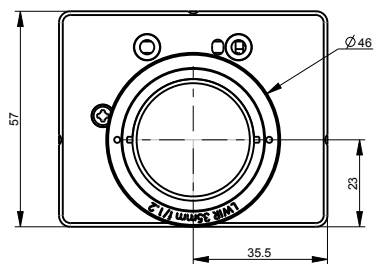
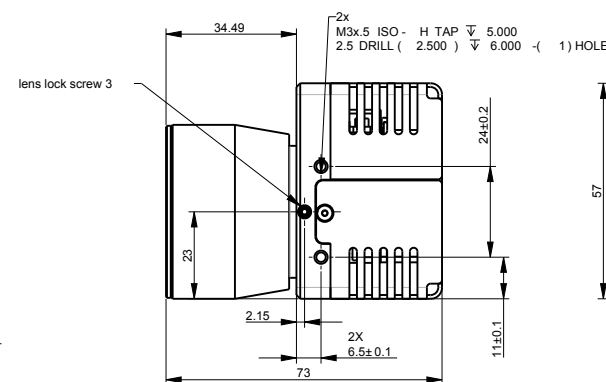
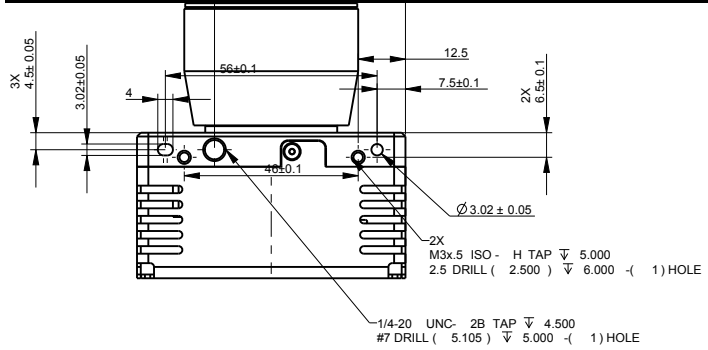
MASSA: 194 g

	CAT NO	DIM	IZO PARAMETRIC LTD			
	QTY	UM	ID/SIGNATURE	DATE		
TOLERANCES UNLESS OTHERWISE SPECIFIED Over Incl 0 6 ± 0.1 6 30 ± 0.2 30 120 ± 0.3 120 315 ± 0.5 315 1000 ± 0.8 angles ± 1°			DESIGNED	Yilzhak	30-JAN-2013	
			CHECKED	Dov K	30-JAN-2013	
			Q.A.			
			APPROVED	DLAN C	31-JAN-2013	
			TITLE	ICD_BLOCK_320_19		
		P.N	OF19A25Q-0A000	SHT OF	1 1	
		SCALE	CLASS	SIZE	DRAWING NO.	
		1:1	UNCLASSIFIED		MD_OF19A25Q-0A000	
				REV	A	

MECHANICAL ICD 25μ w/ 35MM LENS

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DESCRIPTION	ECO NO.	USER ID.	DATE
IF CHANGES ARE GIVEN IN PARENTHESIS			YYYY-MM-DD



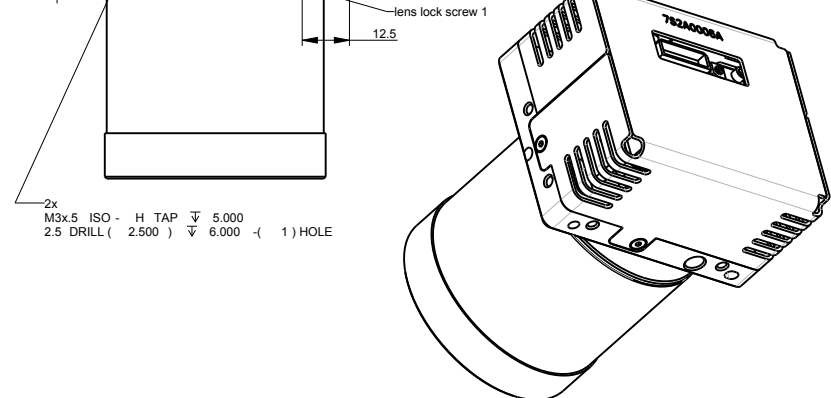
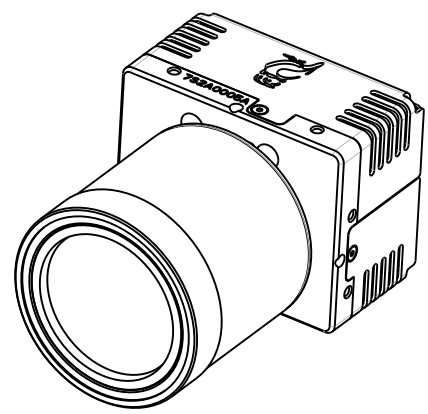
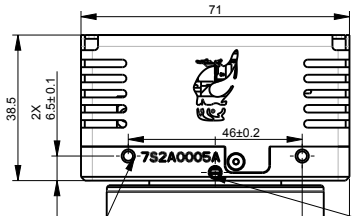
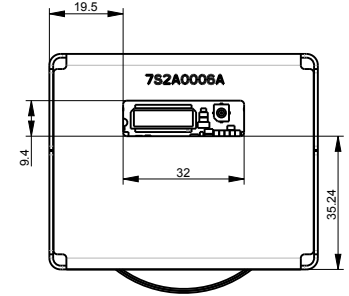
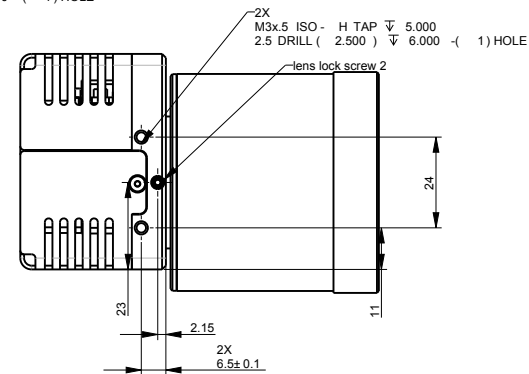
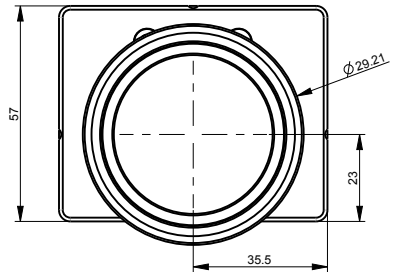
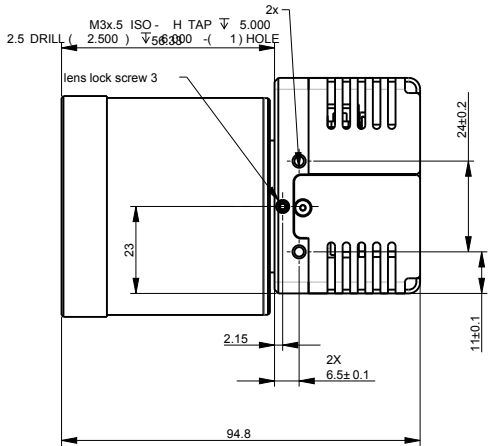
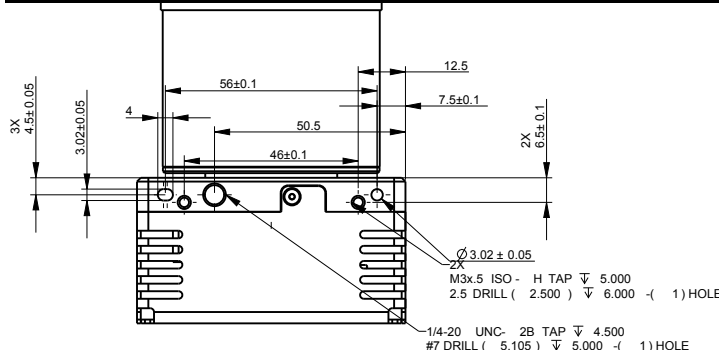
MASSA: 305 g

TOLERANCES UNLESS OTHERWISE SPECIFIED	CAT NO	DIM	IZO PARAMETRIC LTD	
	QTY	UM	ID/SIGNATURE	DATE
0 6 ± 0.1			DESIGNED Yilzhak	30-JAN-2013
6 30 ± 0.2			CHECKED Dov K	30-JAN-2013
30 120 ± 0.3			Q.A	
120 315 ± 0.5			APPROVED LAN C	31-JAN-2013
315 1000 ± 0.8			TITLE	ICD_BLOCK_320_35
angles ± 1°			P.N	OF35A25Q-0A000
			SCALE	CLASS
			1:1	UNCLASSIFIED
			SIZE	REV
			MD_OF35A25Q-0A000	1 1
				A

MECHANICAL ICD 25μ w/ 50MM LENS

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DESCRIPTION	ECO NO.	USER ID.	DATE
IF CHANGES ARE GIVEN IN PARENTHESIS			YYYY.MM.DD



MASSA: 387 g

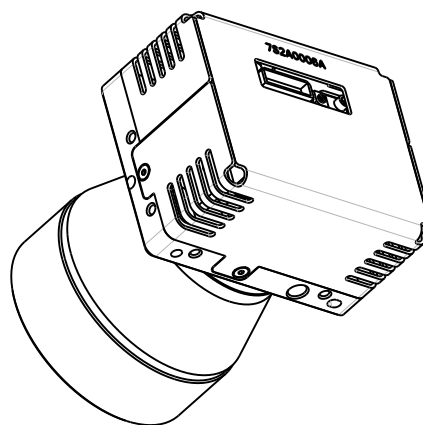
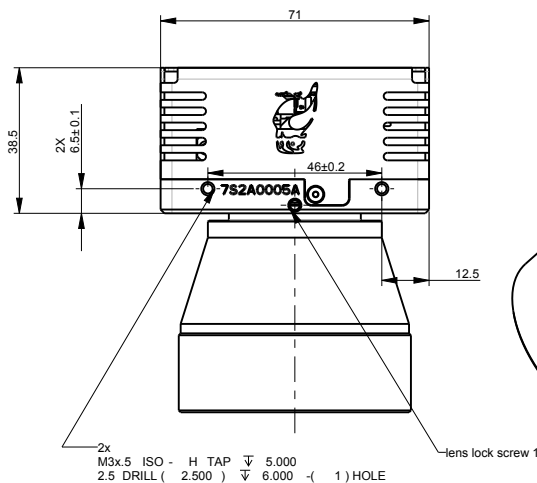
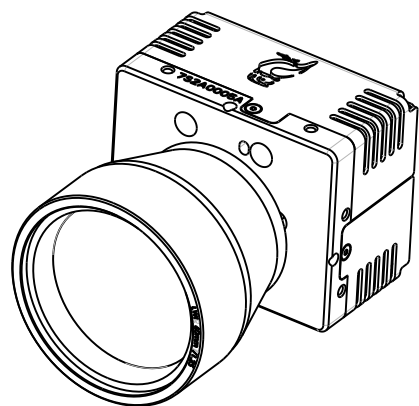
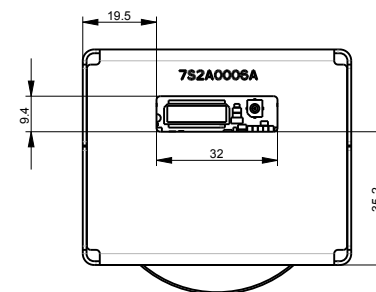
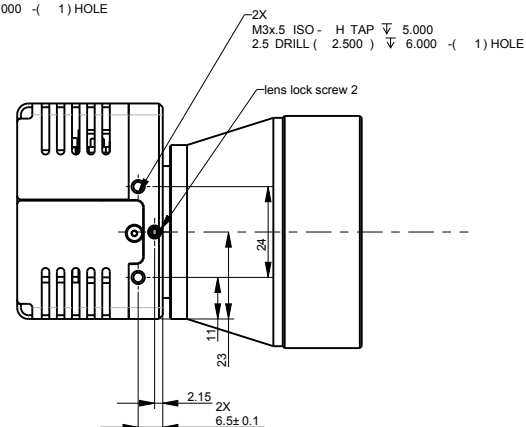
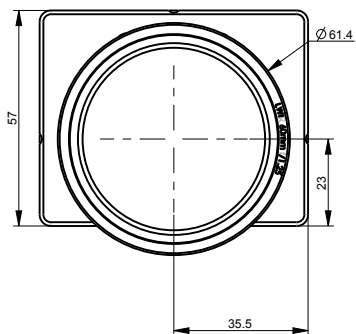
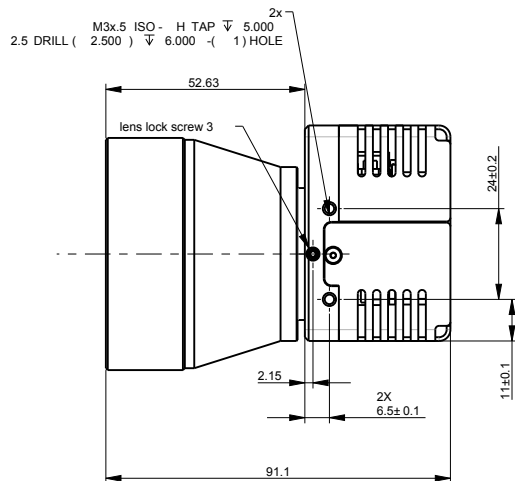
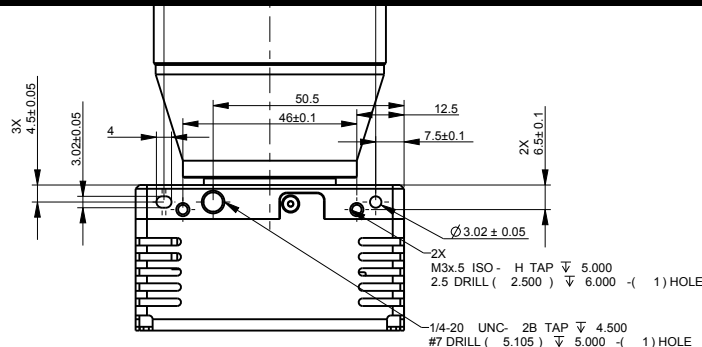
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		QTY	UM	ID/SIGNATURE	DATE
				DESIGNED Yilzhak	30-JAN-2013
				CHECKED Dov K	30-JAN-2013
				Q.A.	
				APPROVED LAN C	31-JAN-2013
		TITLE ICD_BLOCK_320_50			
		P.N OF50A25Q-0A000			
		SHT OF 1 1			
		REV A			
SURFACE TEXTURE		SCALE	CLASS	SIZE	DRAWING NO.
		1:1	UNCLASSIFIED		MD_OF50A25Q-0A000

TOLERANCES UNLESS OTHERWISE SPECIFIED	Over	Incl
	0	6 ± 0.1
	6	30 ± 0.2
	30	120 ± 0.3
	120	315 ± 0.5
	315	1000 ± 0.8
	angles ± 1°	

MECHANICAL ICD 25μ w/ 60MM LENS

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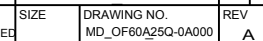
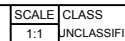
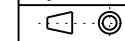
DESCRIPTION	ECO NO.	USER ID.	DATE
IF CHANGES ARE GIVEN IN PARENTHESIS			YYYY.MM.DD



MASSA: 373 g

		CAT NO	DIM	IZO PARAMETRIC LTD	
		QTY	UM	ID/SIGNATURE	DATE
				DESIGNED Yilzhak	30-JAN-2013
				CHECKED Dov K	30-JAN-2013
				Q.A.	
				APPROVED LAN C	31-JAN-2013
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				SHT OF	1 1

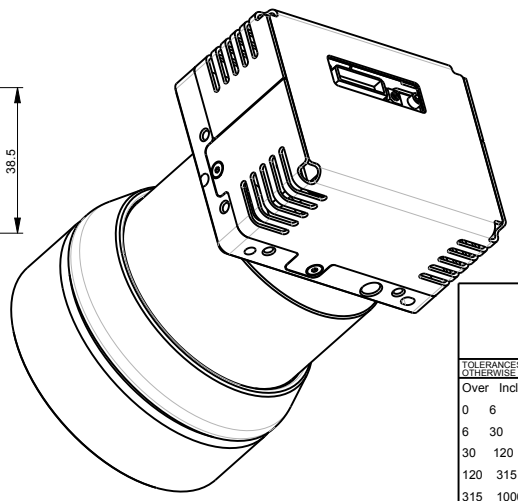
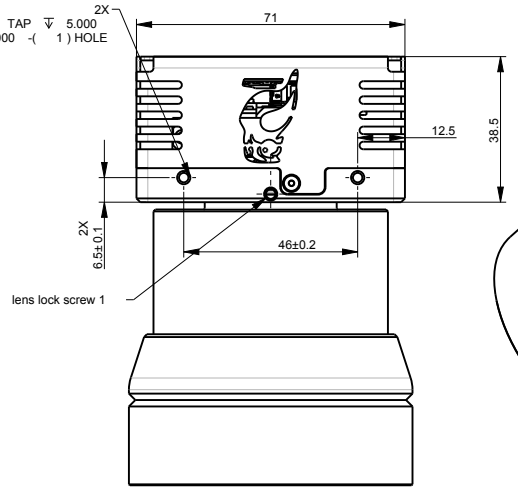
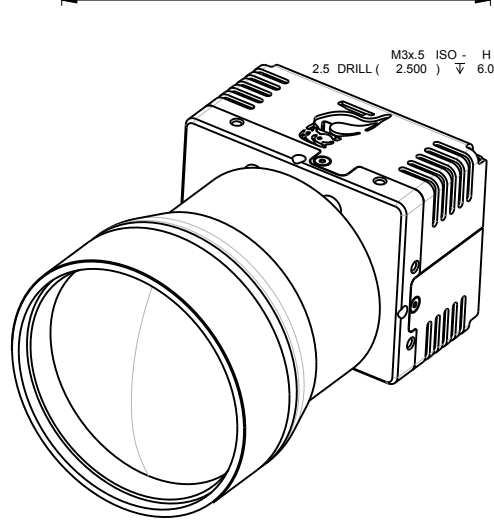
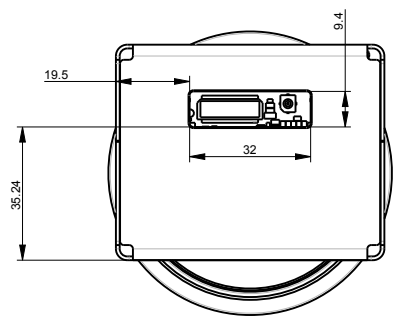
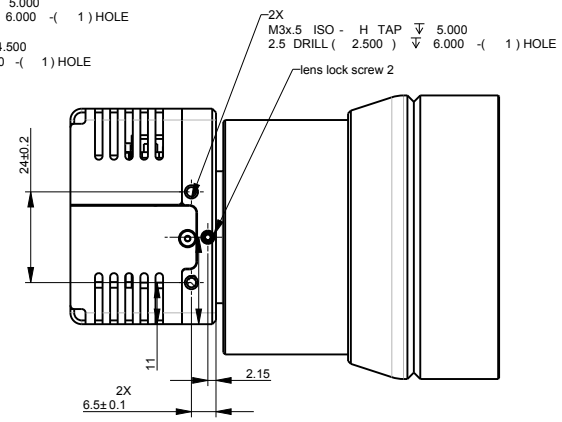
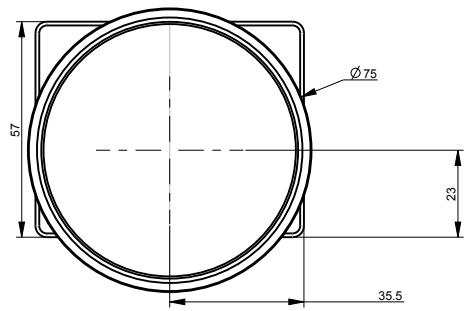
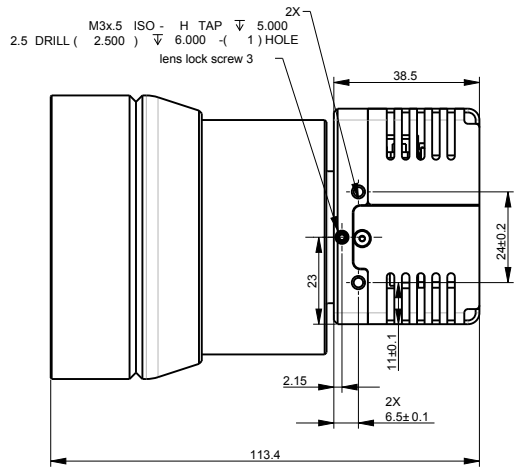
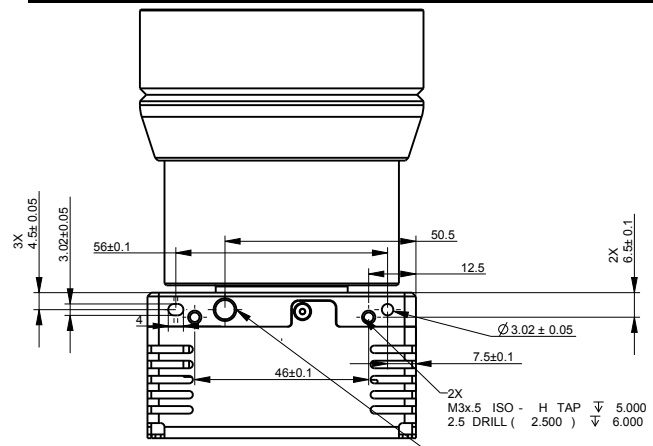
TOLERANCES UNLESS OTHERWISE SPECIFIED	
Over	Incl
0	6 ± 0.1
6	30 ± 0.2
30	120 ± 0.3
120	315 ± 0.5
315	1000 ± 0.8
angles	± 1°



MECHANICAL ICD 25μ w/ 100MM LENS

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DESCRIPTION	ECO NO.	USER ID.	DATE
IF CHANGES ARE GIVEN IN PARENTHESIS			YYYY-MM-DD



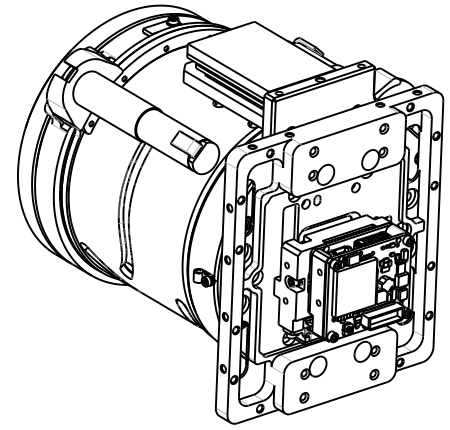
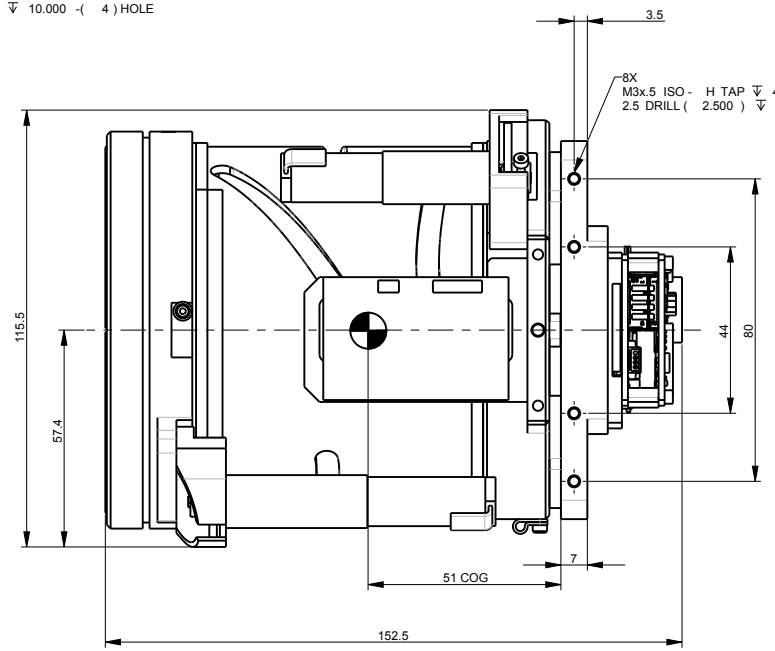
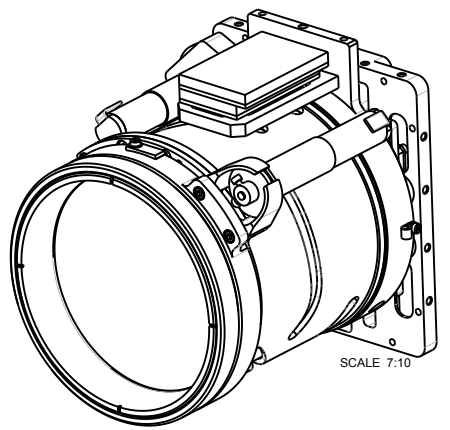
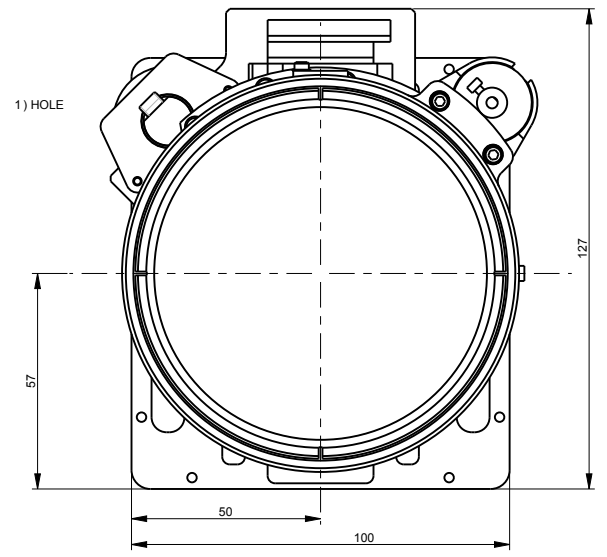
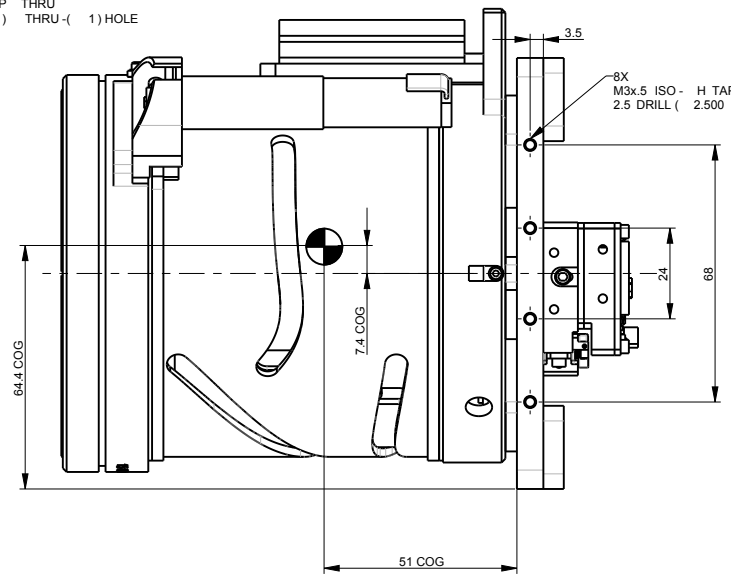
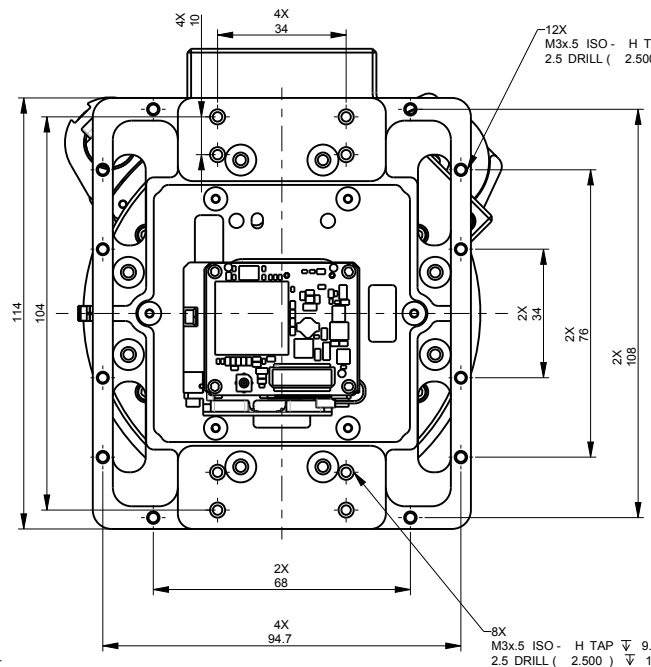
MASSA: 526 g

TOLERANCES UNLESS OTHERWISE SPECIFIED	Over	Incl			
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	6	30	± 0.2		
	30	120	± 0.3		
	120	315	± 0.5		
	315	1000	± 0.8		
	angles		± 1°		
SURFACE TEXTURE		SCALE	CLASS	SIZE	
		1:1	UNCLASSIFIED		
CAT NO		DIM	IZO PARAMETRIC LTD		
QTY		UM	ID/SIGNATURE	DATE	
			DESIGNED Yrlzhak	30-JAN-2013	
			CHECKED Dov K	30-JAN-2013	
			Q.A.		
			APPROVED LAN C	31-JAN-2013	
			TITLE		
			ICD_BLOCK_320_100		
			P.N	SHT OF	
			OF100A25Q-0A000	1 1	
			DRAWING NO.	REV	
			MD_OF100A25Q-0A000	A	

MECHANICAL ICD 25μ w/ 15-100MM LENS

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DESCRIPTION	ECO NO.	USER ID.	DATE
B new chassis			10-DEC-2012



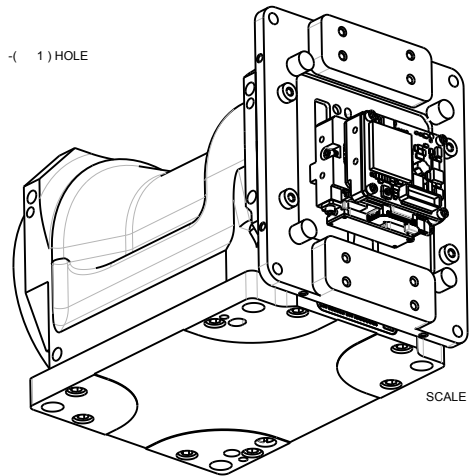
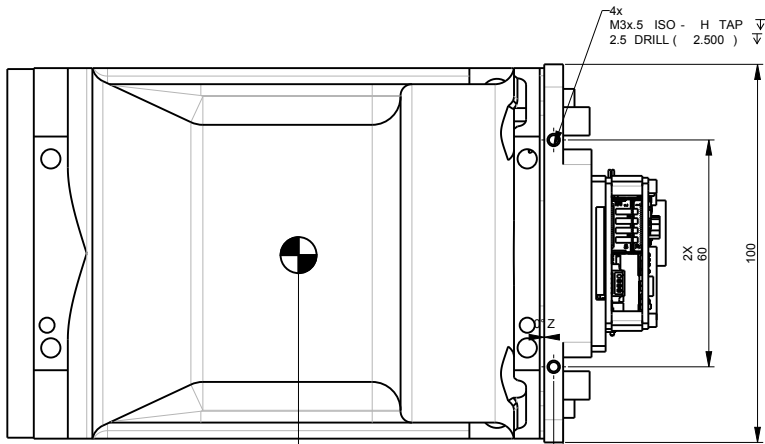
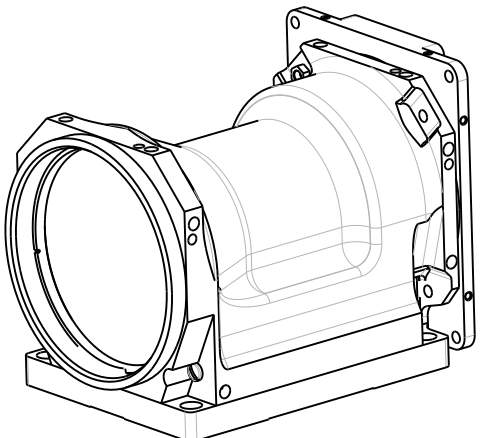
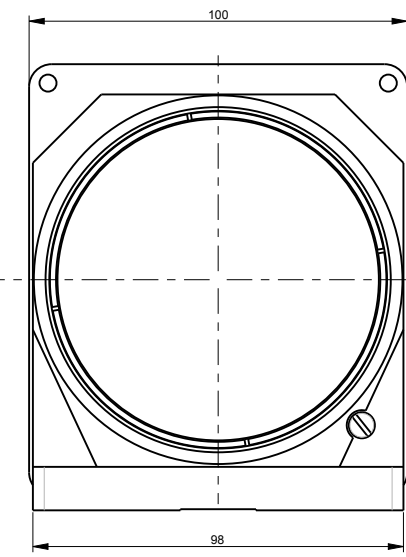
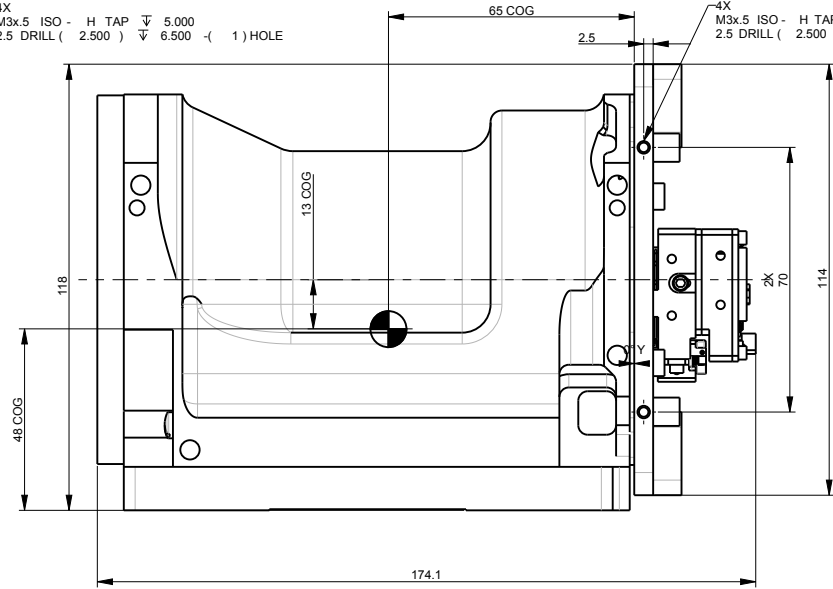
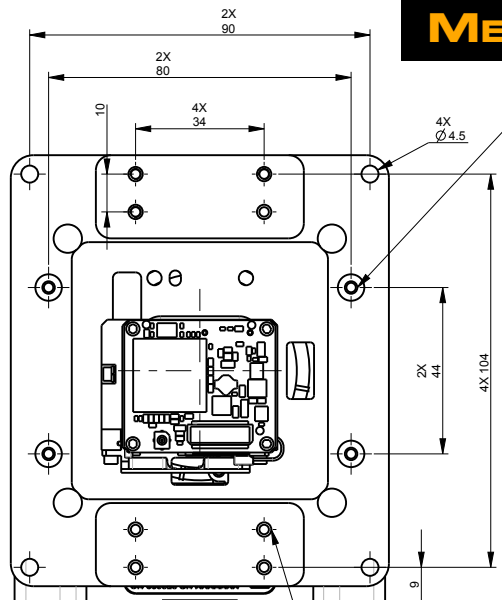
WEIGHT-1.61 Kg

		CAT NO	DIM	IZO PARAMETRIC LTD	
		QTY	UM	ID/SIGNATURE	DATE
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				CHECKED Dov.k	05-NOV-2012
				Q.A	
				APPROVED	
				TITLE	ICD_COMPACT_15_100
				P.N	OF100225Q-0A000
				SHT OF	1 1
				REV	B
TOLERANCES UNLESS OTHERWISE SPECIFIED		SCALE	CLASS	SIZE	DRAWING NO.
Over Incl		1:1	UNCLASSIFIED		MD-OF100225Q-0A000
0 6 ± 0.1					
6 30 ± 0.2					
30 120 ± 0.3					
120 315 ± 0.5					
315 1000 ± 0.8					
angles ± 1°					
SURFACE TEXTURE					

MECHANICAL ICD 25μ w/ 45/135MM LENS

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DESCRIPTION	ECO NO.	USER ID.	DATE
B NEW CHASSIS			10-DEC-2012



WEIGHT- 1.46 Kg

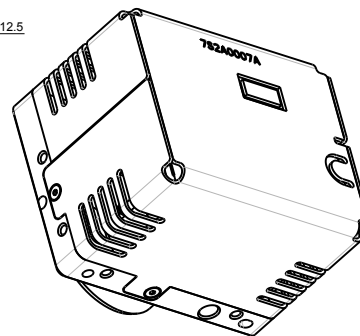
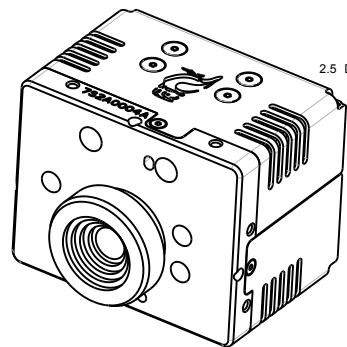
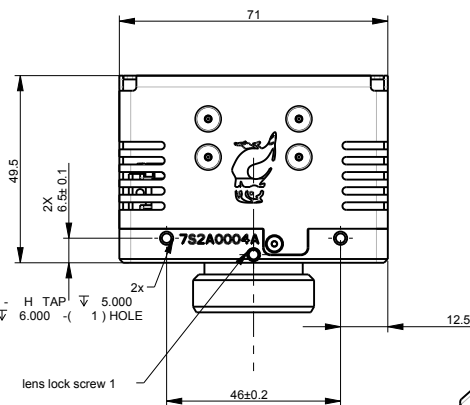
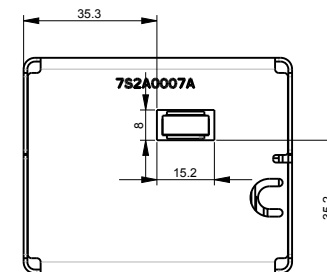
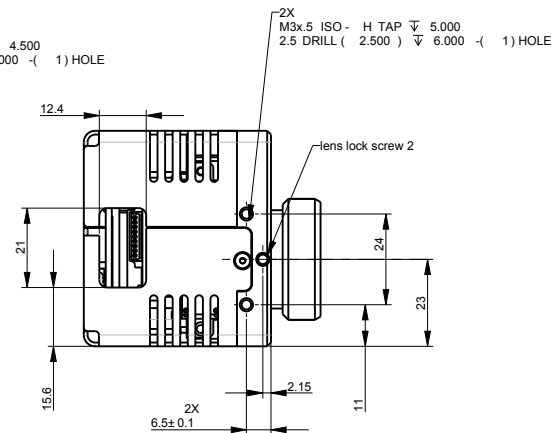
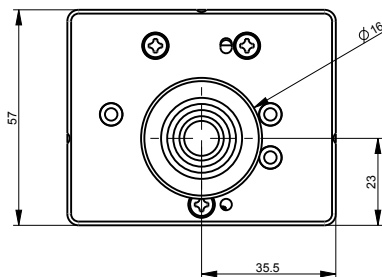
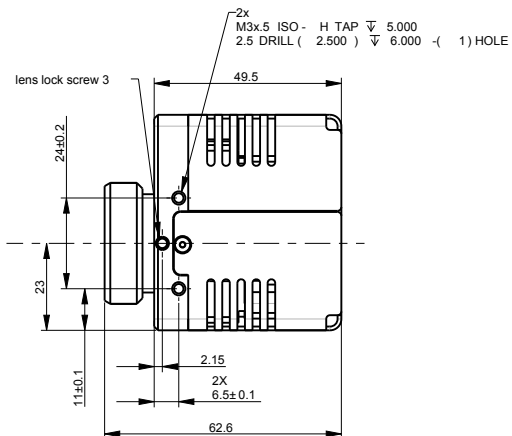
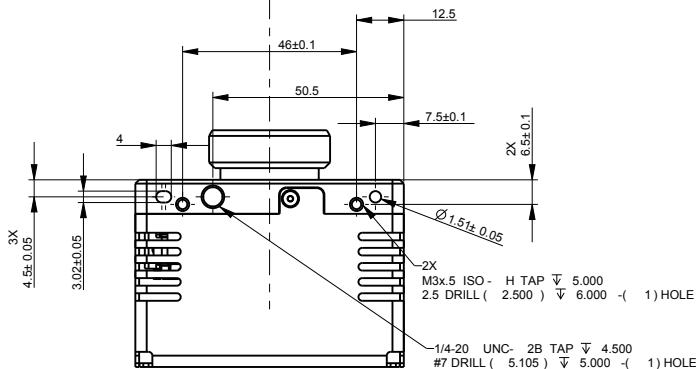
TOLERANCES UNLESS OTHERWISE SPECIFIED	Over	Incl					
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	6 30	± 0.2					
	30 120	± 0.3					
	120 315	± 0.5					
	315 1000	± 0.8					
	angles	± 1°					
SURFACE TEXTURE		SCALE	CLASS	SIZE	DRAWING NO.	REV	
		1:1	UNCLASSIFIED		ICD-OF135N25Q-0A001	B	

CAT NO	DIM	IZO PARAMETRIC LTD	
QTY	UM	ID/SIGNATURE	DATE
		DESIGNED Yilzhak	05-NOV-2012
		CHECKED Dov.k	05-NOV-2012
		Q.A.	
		APPROVED	
TITLE		COMPACT EYE OPEN FRAME ARBEL (45-135)	
P.N	OF135N25Q-0A001	SHT OF	
		1	1

MECHANICAL ICD 17μ w/ 8.5MM LENS

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DESCRIPTION	ECO NO.	USER ID.	DATE
IF CHANGES ARE GIVEN IN PARENTHESIS			YYYY.MM.DD



MASSA: 263 g

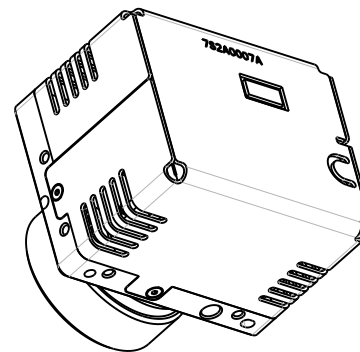
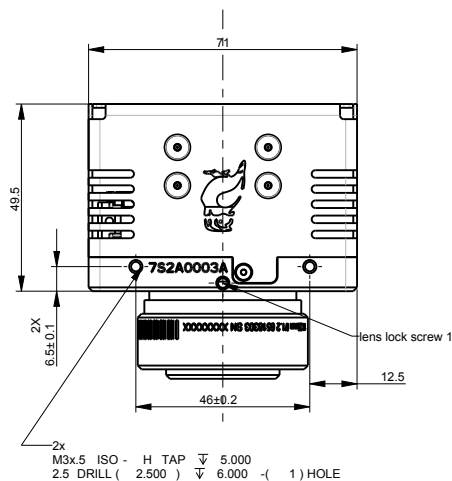
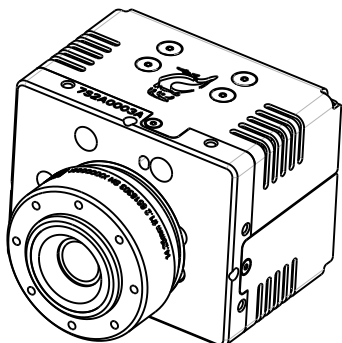
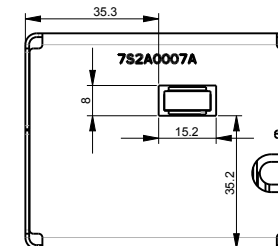
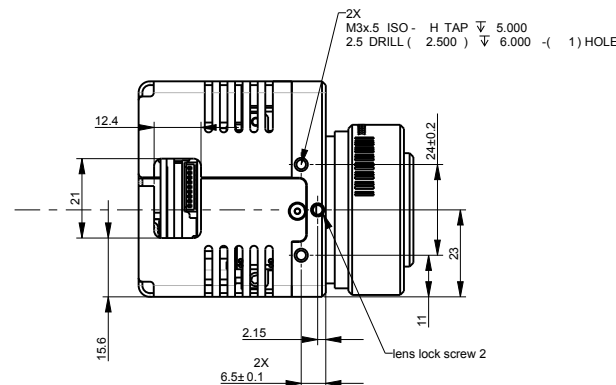
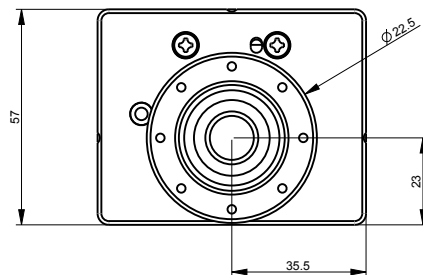
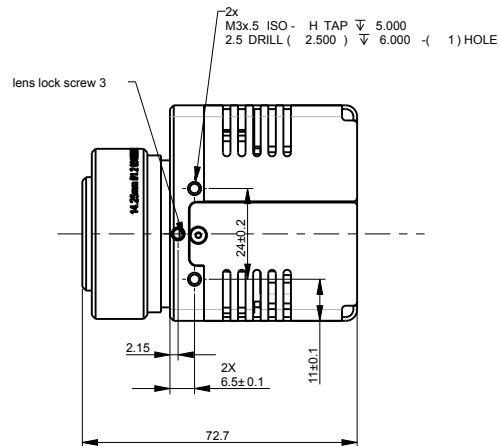
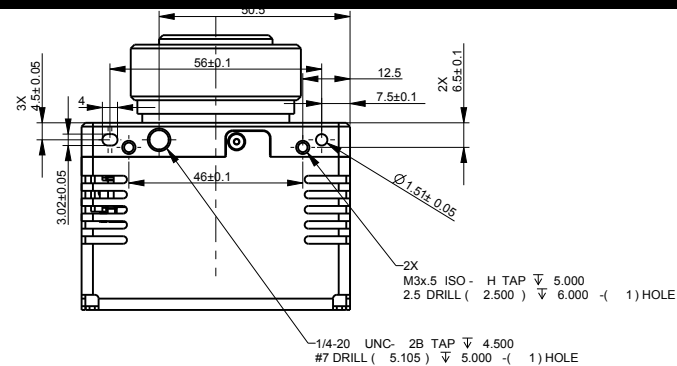
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		QTY	UM	ID/SIGNATURE	DATE
				DESIGNED Yilzhak	30-JAN-2013
				CHECKED Dov K	30-JAN-2013
				Q.A.	
				APPROVED LAN C	31-JAN-2013
		TITLE ICD_BLOCK_640_8_5			
		P.N. OF8A17V-0A000			SHT OF 1 1
		DRAWING NO. MD_OF8A17V-0A000			REV A
SURFACE TEXTURE		SCALE 1:1	CLASS UNCLASSIFIED	SIZE	

TOLERANCES UNLESS OTHERWISE SPECIFIED	Over	Incl
	0	6 ± 0.1
	6	30 ± 0.2
	30	120 ± 0.3
	120	315 ± 0.5
	315	1000 ± 0.8
	angles ± 1°	

MECHANICAL ICD 17μ w/ 14MM LENS

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DESCRIPTION	ECO NO.	USER ID.	DATE
IF CHANGES ARE GIVEN IN PARENTHESIS			YYYY-MM-DD



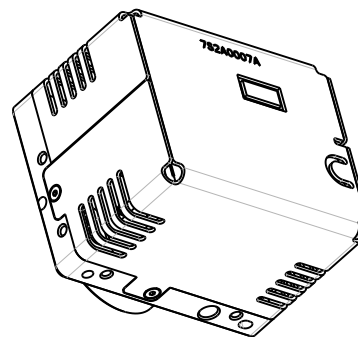
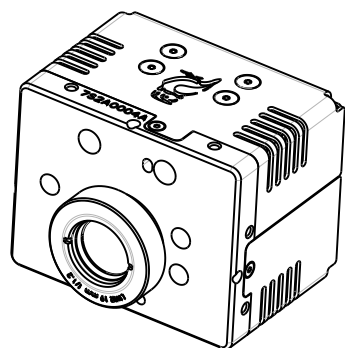
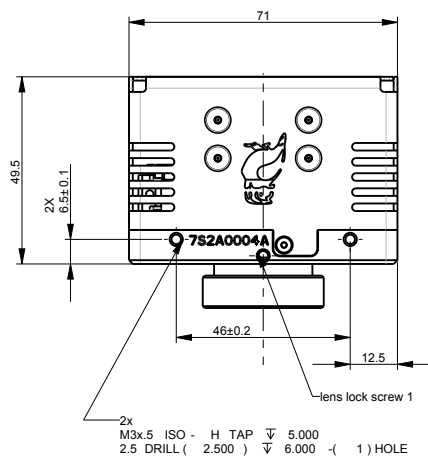
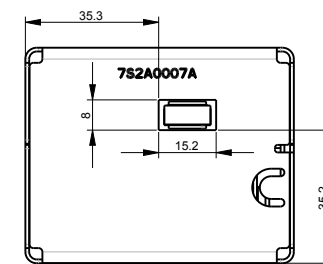
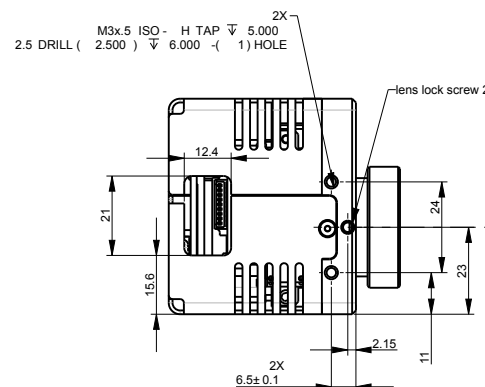
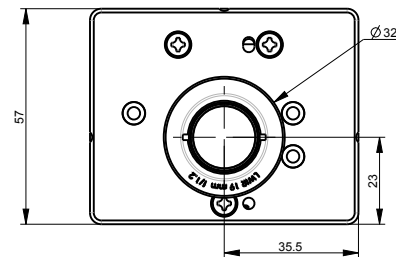
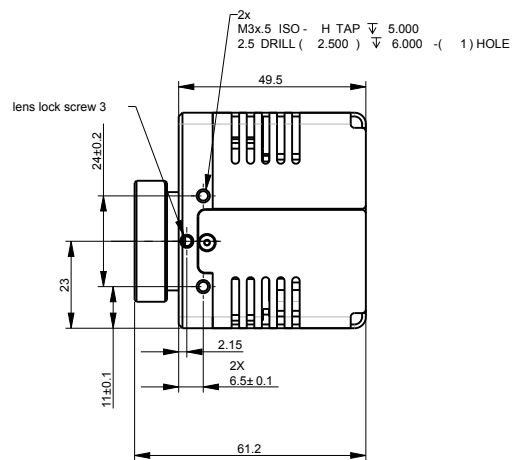
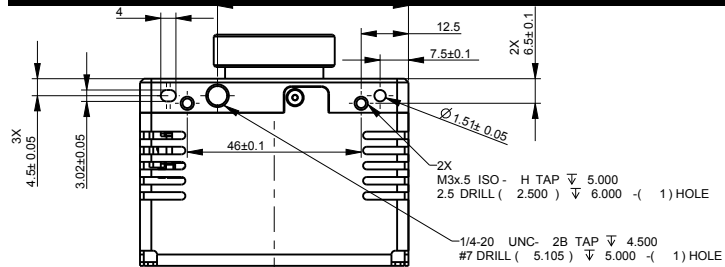
MASSA: 264 g

CAT NO		DIM	IZO PARAMETRIC LTD	
QTY		UM	ID/SIGNATURE	DATE
			DESIGNED Yitzhak	30-JAN-2013
			CHECKED Dov K	30-JAN-2013
			Q.A.	
			APPROVED LAN C	31-JAN-2013
TOLERANCES UNLESS OTHERWISE SPECIFIED				
Over	Incl			
0	6	± 0.1		
6	30	± 0.2		
30	120	± 0.3		
120	315	± 0.5		
315	1000	± 0.8		
angles		± 1°		
TITLE ICD_BLOCK_640_14				
P.N OF14A17V-0A000			SHT OF	
			1	1
SURFACE TEXTURE		SCALE	CLASS	DRAWING NO.
		1:1	UNCLASSIFIED	MD_OF14A17V-0A000
		SIZE	REV	
			A	

MECHANICAL ICD 17μ w/ 19MM LENS

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DESCRIPTION	ECO NO.	USER ID.	DATE
IF CHANGES ARE GIVEN IN PARENTHESIS			YYYY-MM-DD



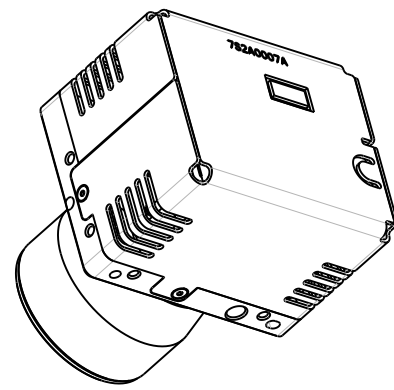
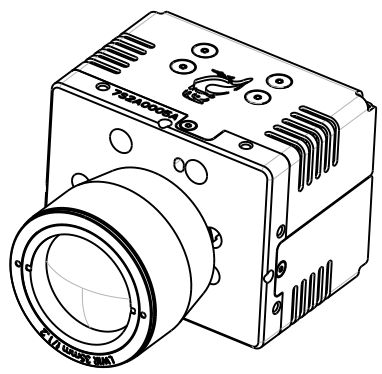
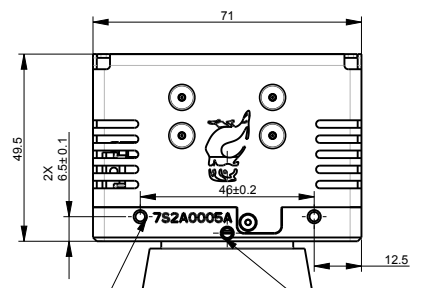
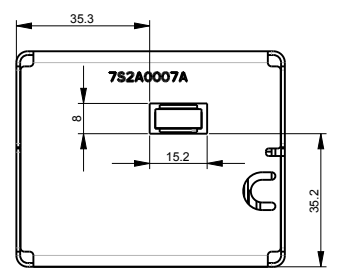
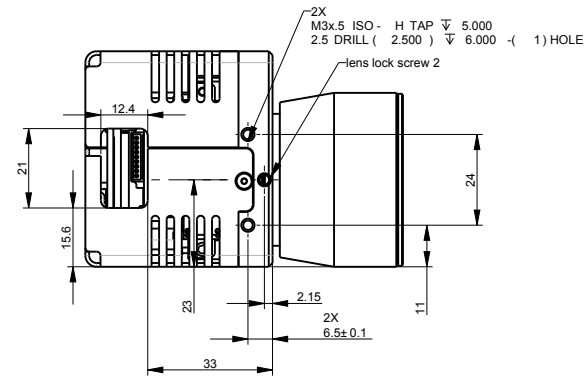
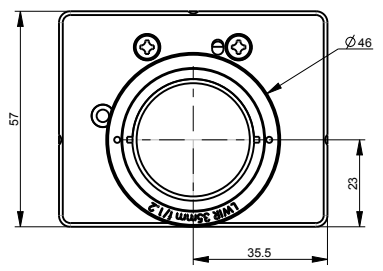
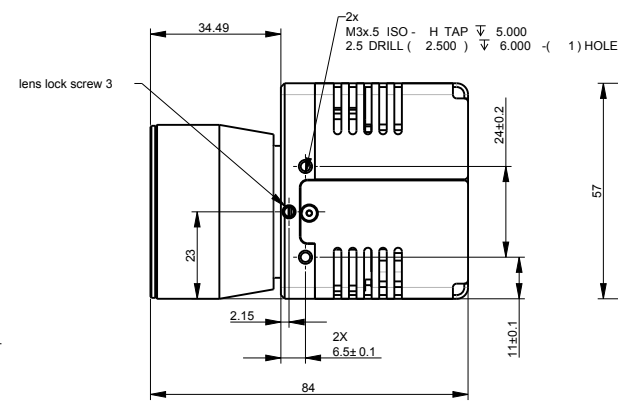
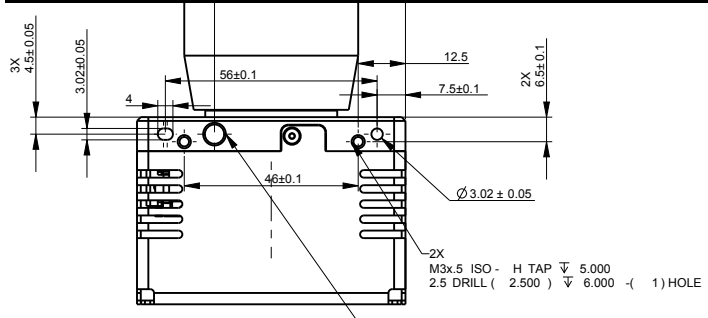
MASSA: 258 g

		CAT NO	DIM	IZO PARAMETRIC LTD	
		QTY	UM	ID/SIGNATURE	DATE
				DESIGNED Yilzhak	30-JAN-2013
				CHECKED Dov K	30-JAN-2013
				Q.A	
				APPROVED LAN C	31-JAN-2013
				TITLE	ICD_BLOCK_640_19
				P.N	OF19A17V-0A000
				SIZE	1 1
				DRAWING NO.	MD_OF19A17V-0A000
				REV	A
TOLERANCES UNLESS OTHERWISE SPECIFIED Over Incl 0 6 ± 0.1 6 30 ± 0.2 30 120 ± 0.3 120 315 ± 0.5 315 1000 ± 0.8 angles ± 1°		SURFACE TEXTURE		SCALE CLASS 1:1 UNCLASSIFIED	

MECHANICAL ICD 25μ w/ 17MM LENS

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DESCRIPTION	ECO NO.	USER ID.	DATE
IF CHANGES ARE GIVEN IN PARENTHESIS			YYYY.MM.DD



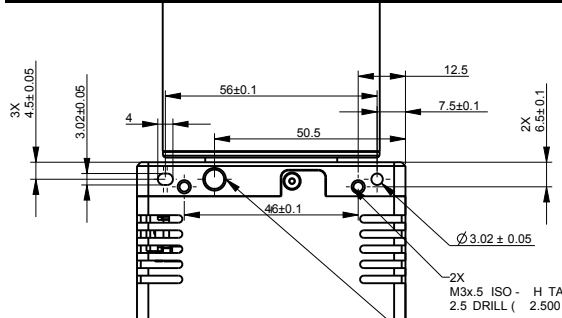
MASSA: 369 g

TOLERANCES UNLESS OTHERWISE SPECIFIED	CAT NO	DIM	IZO PARAMETRIC LTD	
			ID/SIGNATURE	DATE
Over Incl	QTY	UM	DESIGNED Yilzhak	30-JAN-2013
0 6 ± 0.1			CHECKED Dov K	30-JAN-2013
6 30 ± 0.2			Q.A	
30 120 ± 0.3			APPROVED LAN C	31-JAN-2013
120 315 ± 0.5			TITLE	ICD_BLOCK_640_35
315 1000 ± 0.8			P.N	OF35A17V-0A000
angles ± 1°			SHT OF	1 1
			SCALE	1:1
			CLASS	UNCLASSIFIED
			SIZE	MD_OF35A17V-0A000
			DRAWING NO.	REV
				A

MECHANICAL ICD 17μ w/ 50MM LENS

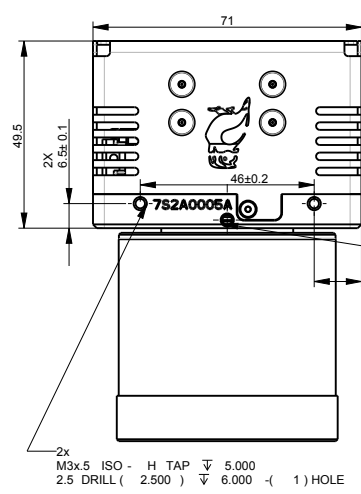
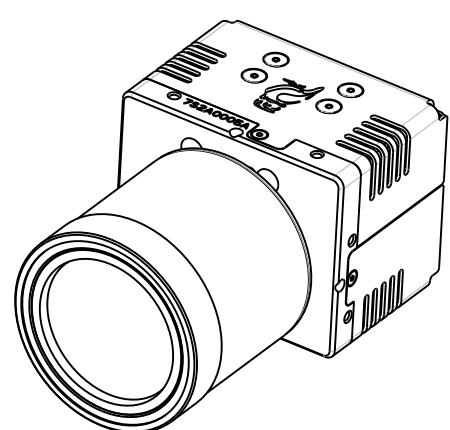
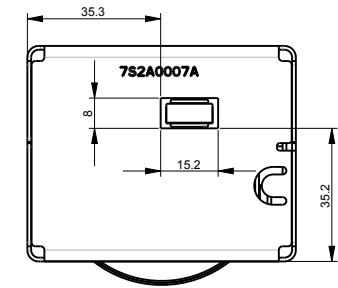
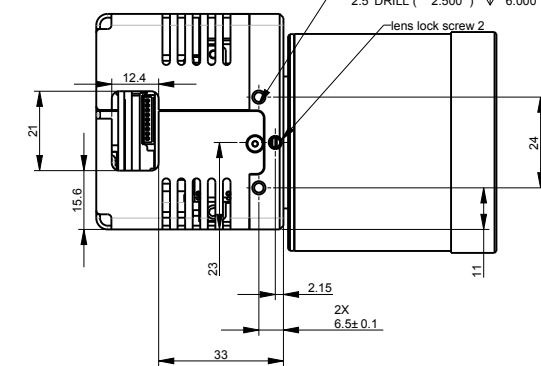
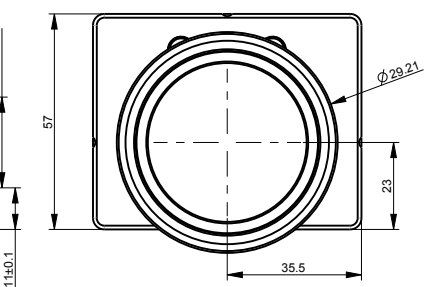
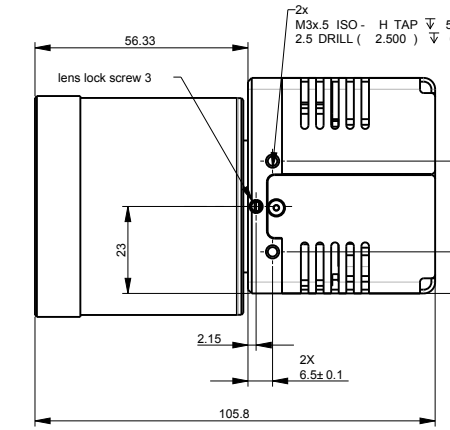
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DESCRIPTION	ECO NO.	USER ID.	DATE
IF CHANGES ARE GIVEN IN PARENTHESIS			YYYY.MM.DD

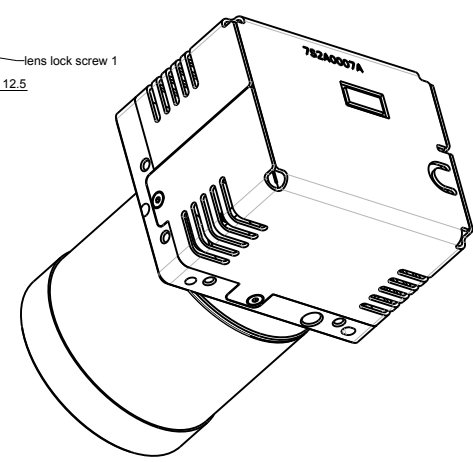


2X
M3x.5 ISO - H TAP ∇ 5.000
2.5 DRILL (2.500) ∇ 6.000 - (1) HOLE

1/4-20 UNC - 2B TAP ∇ 4.500
#7 DRILL (5.105) ∇ 5.000 - (1) HOLE



2X
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2.5 DRILL (2.500) ∇ 6.000 - (1) HOLE

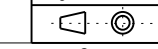


MASSA: 451 g

		CAT NO	DIM	IZO PARAMETRIC LTD	
		QTY	UM	ID/SIGNATURE	DATE
				DESIGNED Yilzhak	30-JAN-2013
				CHECKED Dov K	30-JAN-2013
				Q.A.	
				APPROVED LAN C	31-JAN-2013
				TITLE	ICD_BLOCK_640_50
				P.N	OF50A17V-0A000
				SIZE	DRAWING NO. MD_OF50A17V-0A000
				SCALE	1:1
				CLASS	UNCLASSIFIED
				REV	1 1
				DATE	30-JAN-2013

TOLERANCES UNLESS OTHERWISE SPECIFIED

Over	Incl	±
0	6	± 0.1
6	30	± 0.2
30	120	± 0.3
120	315	± 0.5
315	1000	± 0.8
angles		± 1°



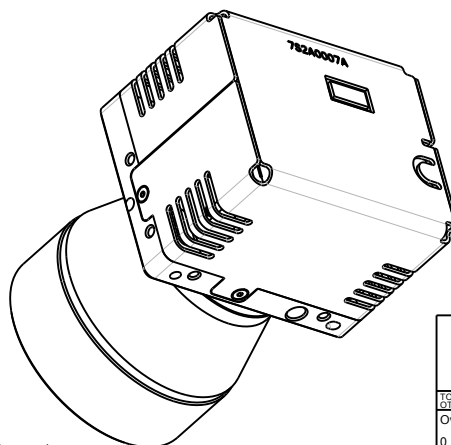
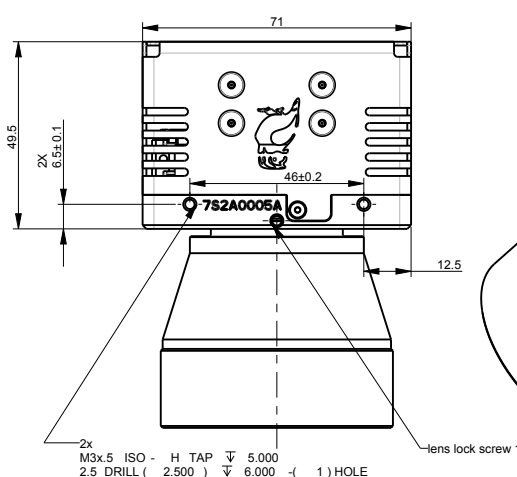
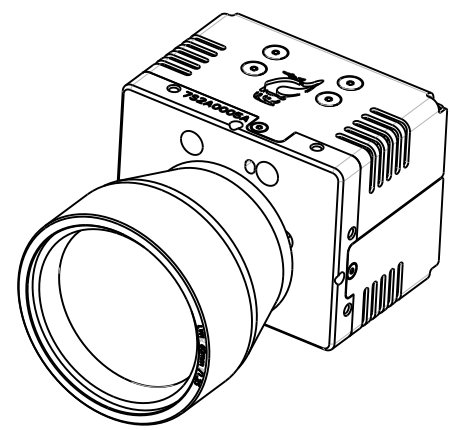
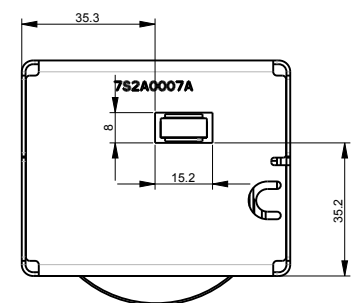
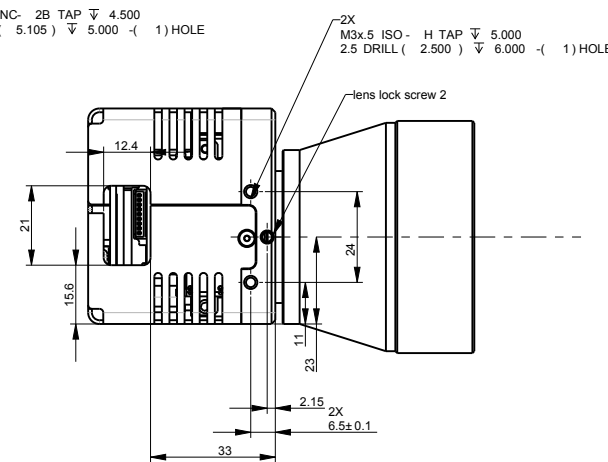
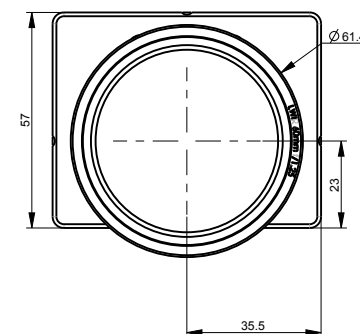
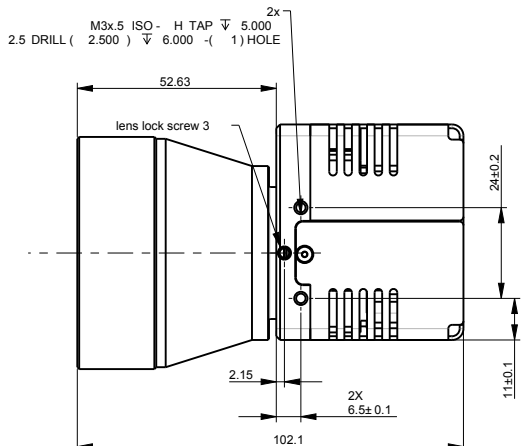
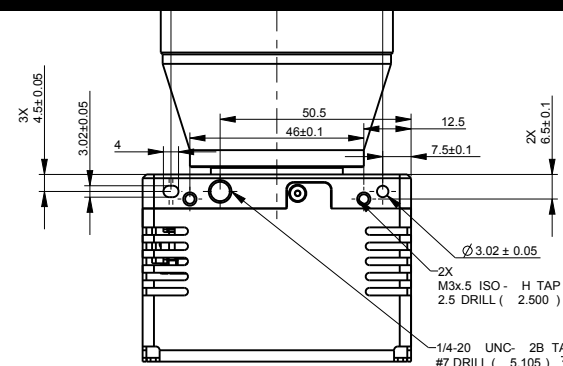
SURFACE TEXTURE

A
B
C
D
E
F

MECHANICAL ICD 17μ w/ 60MM LENS

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DESCRIPTION	ECO NO.	USER ID.	DATE
IF CHANGES ARE GIVEN IN PARENTHESIS			YYYY.MM.DD



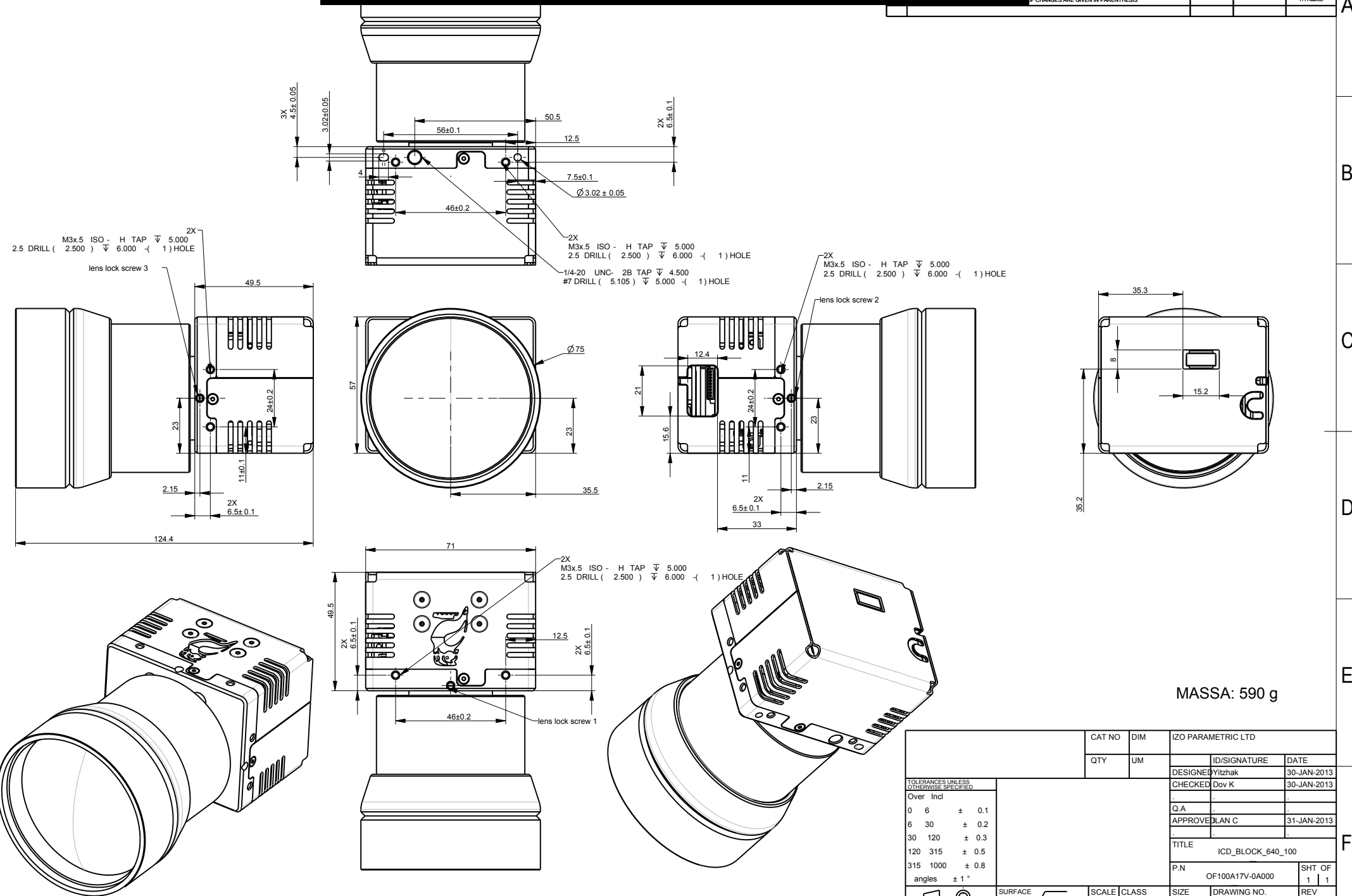
MASSA: 437 g

TOLERANCES UNLESS OTHERWISE SPECIFIED	CAT NO	DIM	IZO PARAMETRIC LTD	
			QTY	UM
Over Incl			ID/SIGNATURE	DATE
0 6 ± 0.1			DESIGNED Yilzhak	30-JAN-2013
6 30 ± 0.2			CHECKED Dov K	30-JAN-2013
30 120 ± 0.3			Q.A.	
120 315 ± 0.5			APPROVED LAN C	31-JAN-2013
315 1000 ± 0.8			TITLE	ICD_BLOCK_640_60
angles ± 1°			P.N	OF60A17V-0A000
			SCALE	1:1
			CLASS	UNCLASSIFIED
			SIZE	
			DRAWING NO.	MD_OF60A17V-0A000
			REV	A
			SHT OF	1 1

MECHANICAL ICD 17μ w/ 100MM LENS

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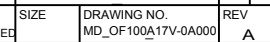
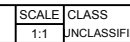
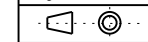
DESCRIPTION	ECO NO.	USER ID.	DATE
IF CHANGES ARE GIVEN IN PARENTHESIS			YYYY.MM.DD



MASSA: 590 g

CAT NO		DIM	IZO PARAMETRIC LTD	
QTY		UM	ID/SIGNATURE	DATE
			DESIGNED Yilzhak	30-JAN-2013
			CHECKED Dov K	30-JAN-2013
			Q.A.	
			APPROVED LAN C	31-JAN-2013
			TITLE	ICD_BLOCK_640_100
			P.N	OF100A17V-0A000
			SIZE	DRAWING NO. MD_OF100A17V-0A000
			SCALE	CLASS
			1:1	UNCLASSIFIED
			SHT OF	REV
			1 1	A

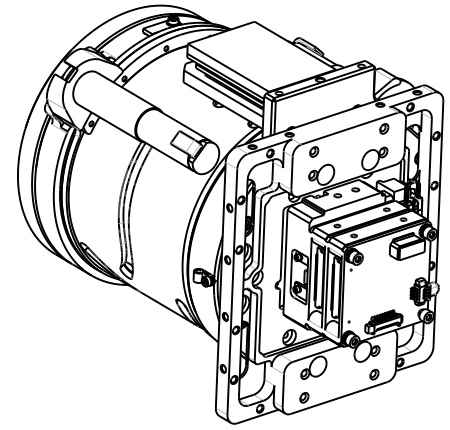
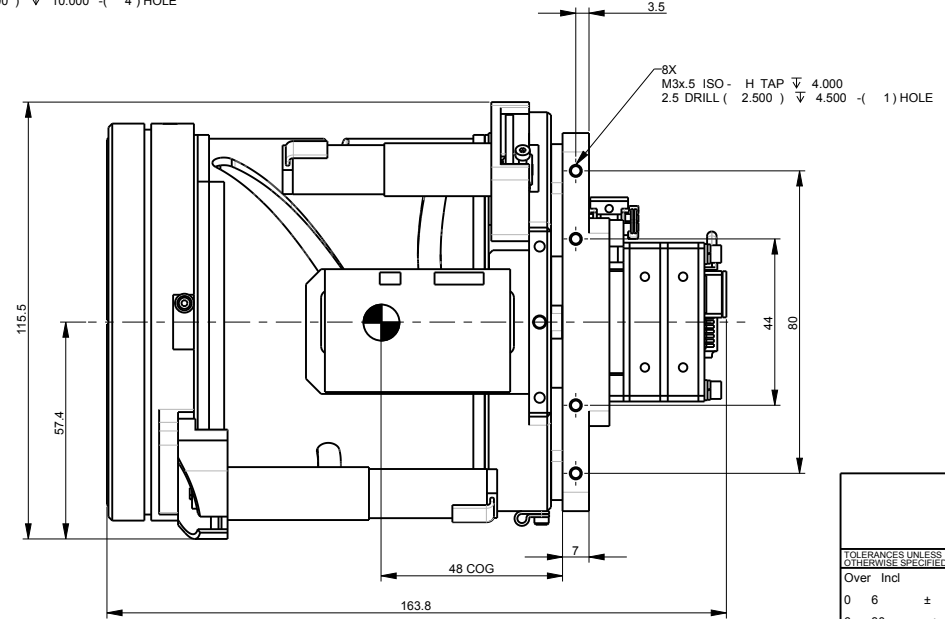
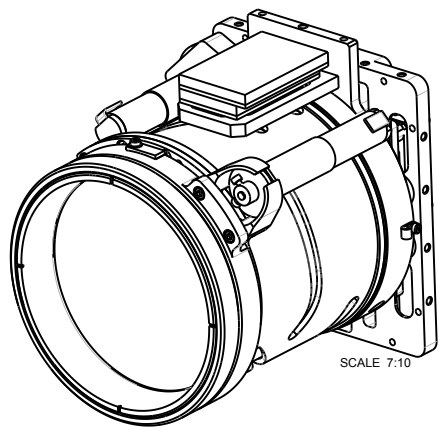
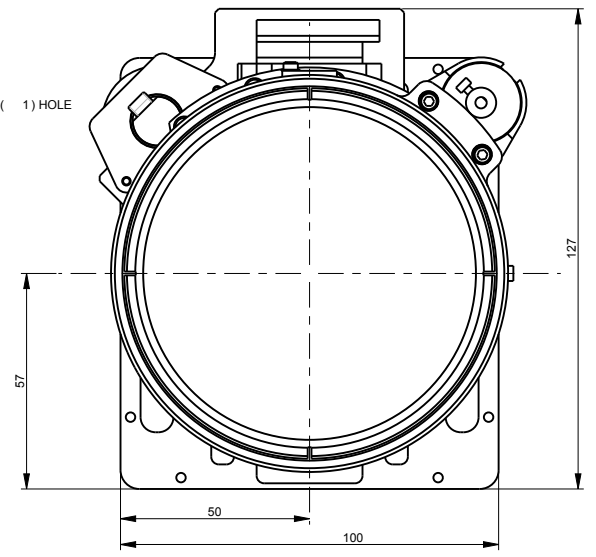
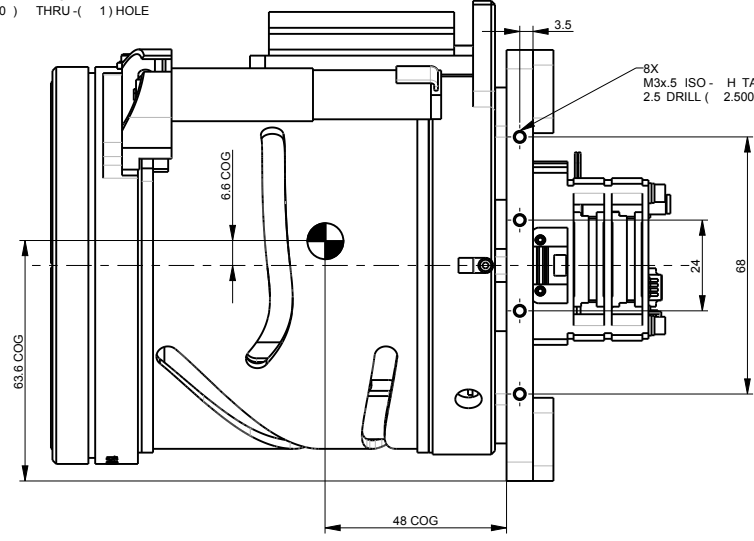
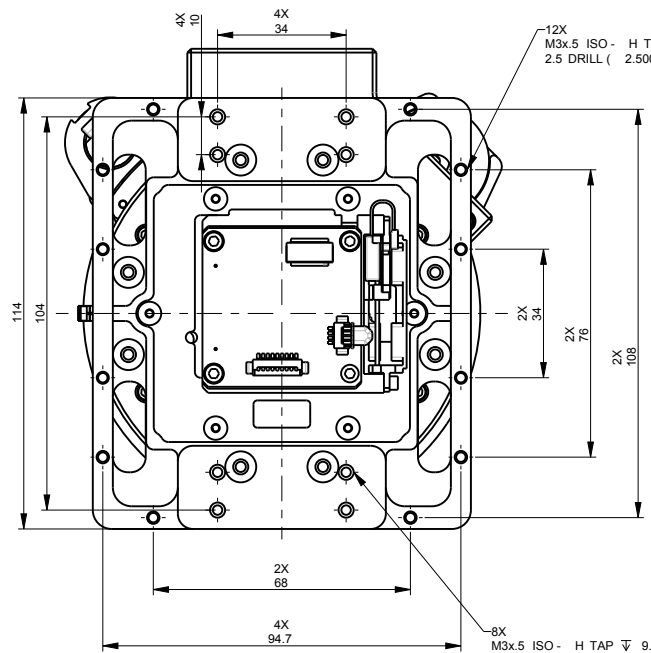
TOLERANCES UNLESS OTHERWISE SPECIFIED	
Over	Incl
0 6	± 0.1
6 30	± 0.2
30 120	± 0.3
120 315	± 0.5
315 1000	± 0.8
angles	± 1°



MECHANICAL ICD 17μ w/ 15-100MM LENS

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DESCRIPTION	ECO NO.	USER ID.	DATE
B new chassis			10-DEC-2012



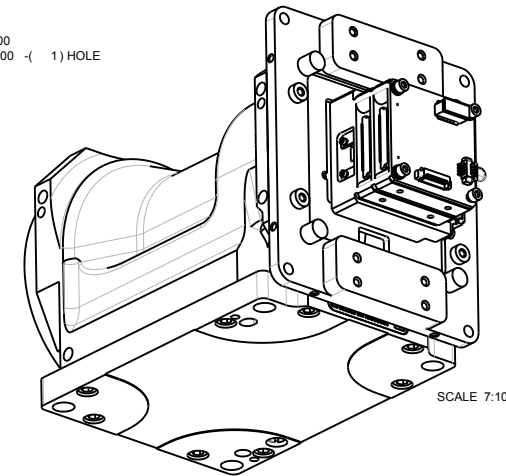
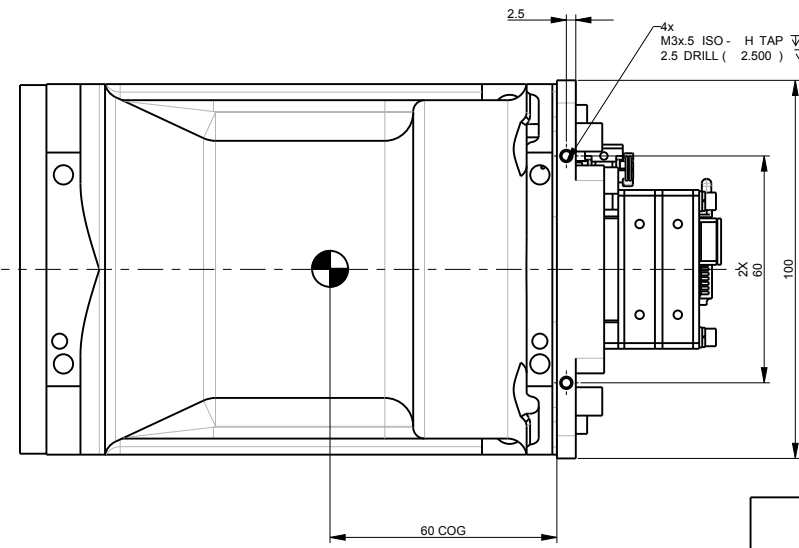
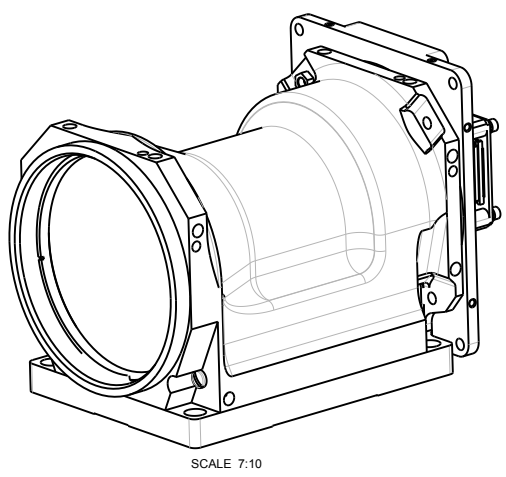
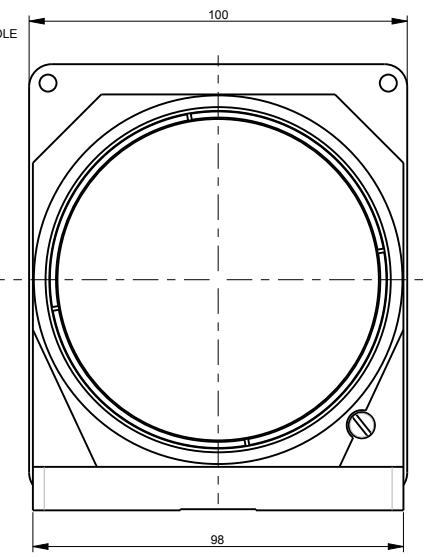
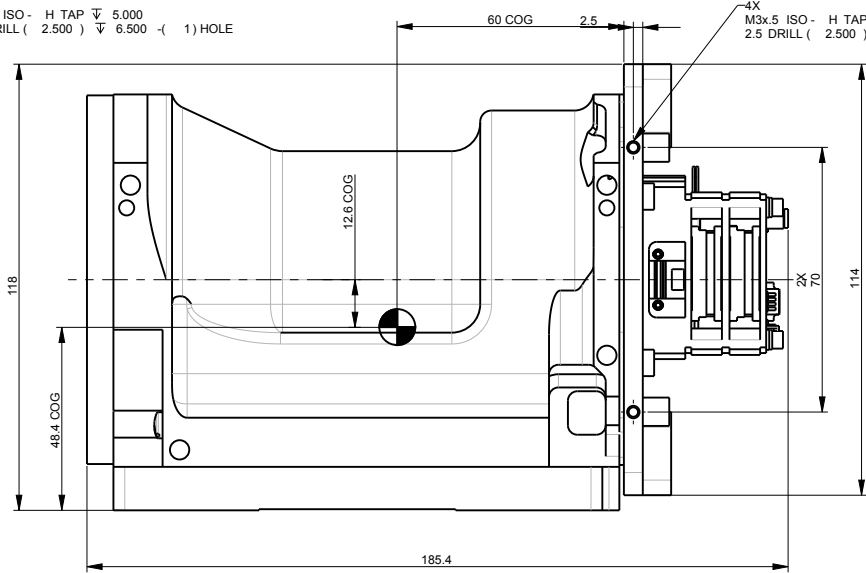
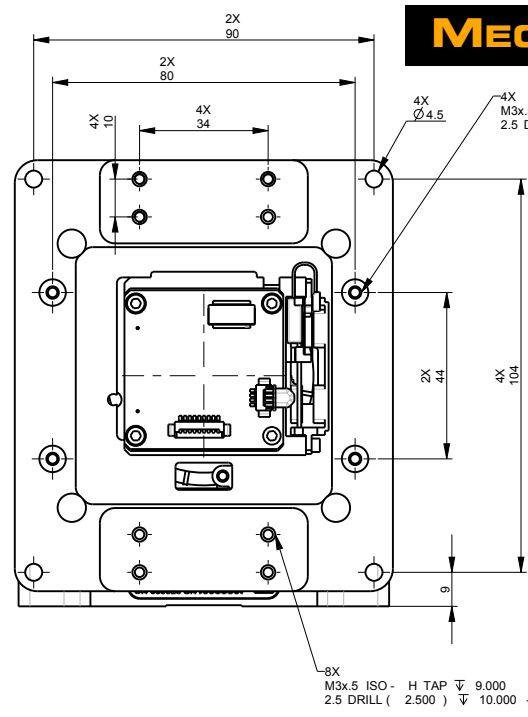
WEIGHT-1.7 Kg

TOLERANCES UNLESS OTHERWISE SPECIFIED	Over Incl				
	0 6	± 0.1			
	6 30	± 0.2			
	30 120	± 0.3			
	120 315	± 0.5			
	315 1000	± 0.8			
	angles	± 1°			
SURFACE TEXTURE		SCALE	CLASS	SIZE	DRAWING NO.
1:1		UNCLASSIFIED			MD-OF100Z17V-0A000
CAT NO		DIM	IZO PARAMETRIC LTD		
QTY		UM	ID/SIGNATURE	DATE	
			DESIGNED Yilzhak	05-NOV-2012	
			CHECKED Dov.k	05-NOV-2012	
			Q.A.		
			APPROVED		
			TITLE	ICD_EYER640_15_100	
			P.N	OF100Z17V-0A000	SHT OF
				1	1
			REV	B	

MECHANICAL ICD 17μ w/ 45/135MM LENS

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DESCRIPTION	ECO NO.	USER ID.	DATE
B new chassis			10-DEC-2012

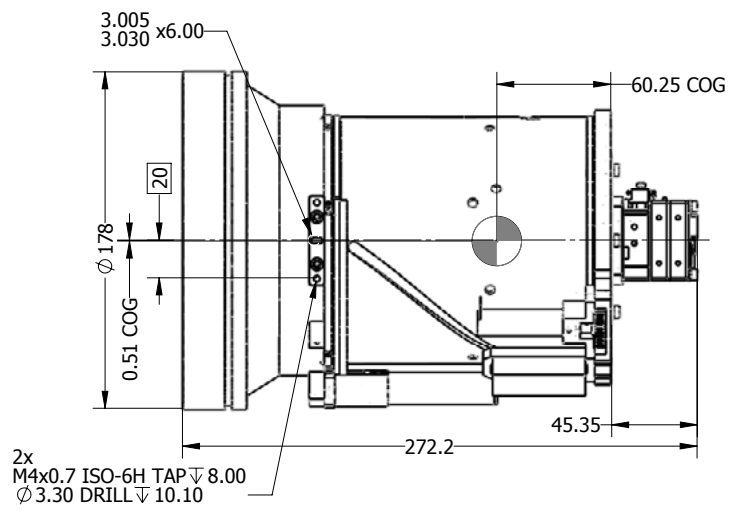
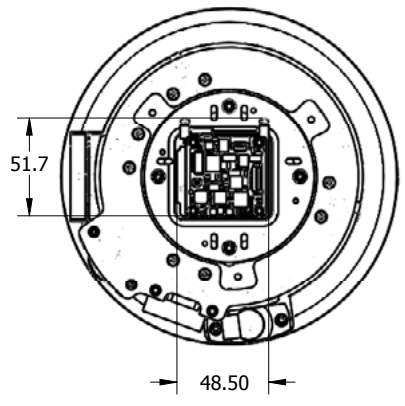


WEIGHT- 1.58 Kg

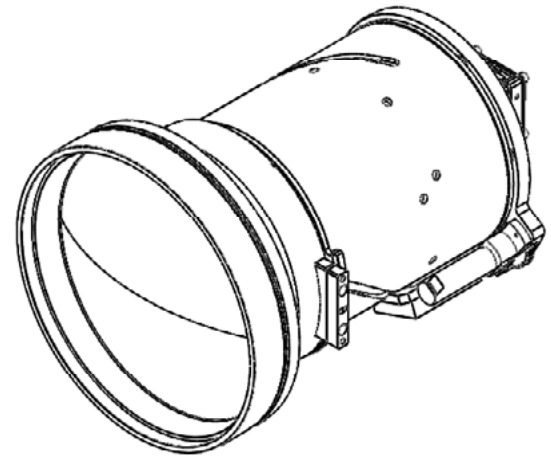
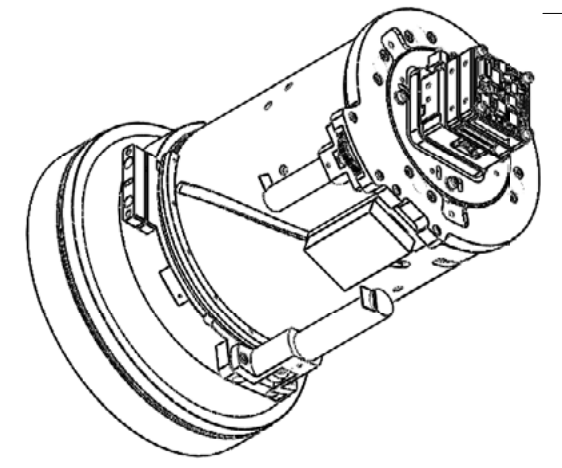
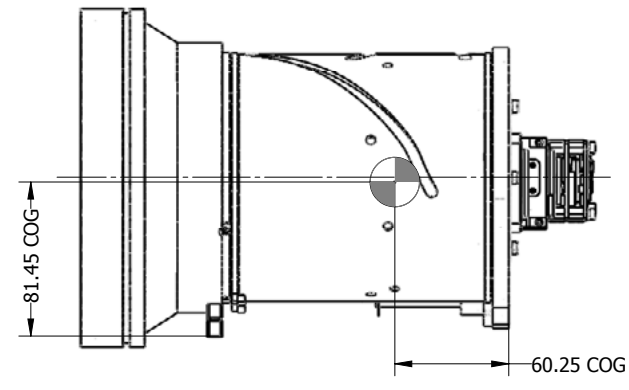
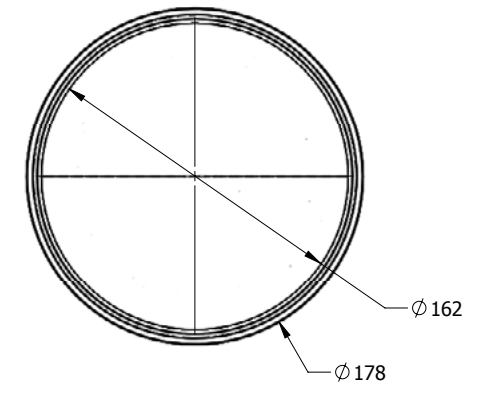
TOLERANCES UNLESS OTHERWISE SPECIFIED	CAT NO	DIM	IZO PARAMETRIC LTD	
	QTY	UM	ID/SIGNATURE	DATE
0 6 ± 0.1			DESIGNED Yilzhak	05-NOV-2012
6 30 ± 0.2			CHECKED Dov.k	05-NOV-2012
30 120 ± 0.3			Q.A	
120 315 ± 0.5			APPROVED	
315 1000 ± 0.8			TITLE EYE_R640_17_OPEN_FRAME_ARBEL (45-135)	
angles ± 1°			P.N OF135N17V-0A002	SHT OF 1 1
	SURFACE TEXTURE	SCALE 1:1	CLASS UNCLASSIFIED	SIZE DRAWING NO. ICD-OF135N17V-0A002
				REV B

MECHANICAL ICD 17μ w/ 25-225MM LENS

REVISIONS		APPROVALS		
DESCRIPTION	SIGN.	DRW.	ENG.	APPR.
A RELEASED	xx	xx	xx	
	DATE	xxx	xxx	



2x
M4x0.7 ISO-6H TAP ∇ 8.00
Ø 3.30 DRILL ∇ 10.10



WEIGHT 4.50 [kg]

MATERIAL XXXXXX	DIM. XXXXXX	SECURITY CLASS UNCLASS.	COPY OF	DATE	SIGN.
MAT.SPEC.	QTY.	SCALE 1:2	SIZE A2	DRAWN 12/02/2013	
TOLERANCES UNLESS OTHERWISE SPECIFIED (ISO 2768) OVER INCL		SUPERSEDING DRAWING NO.		CHECKED 12/02/2013	
0 6 ±0.1	6 30 ±0.2	NEXT ASSY PART NO. SEE BOM		APPR.DGN 12/02/2013	
30 120 ±0.3	120 315 ±0.5	PR. MGR. O.A.		12/02/2013	
315 1000 ±0.8	ANGLES ±1°	PROCESS/TREATMENT		PART NAME XXXXXXXXXX	
SURFACE TEXTURE (ISO 1302)		SEE NOTE		PART NO. XXXXXXXXXX	
SURFACE √ (M)		SH. OF 1/1		DRAWING NO. 25/225 OPEN FRAME	
					REV. A

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